VOL. XL. No. 12 DECEMBER 1955

MECCANO MAGAZINE

A RAILWAY'S HOLLY TREE

1/-

DINKY TOYS

TRADE MARK REGD.

No. 132
Packard Convertible
Length 4½ in. **4/6**

No. 107
Sunbeam Alpine Sports
Length 3¾ in **3/11**

No. 154
Hillman Minx
Length 3½ in. **2/6**

No. 734
Vickers Supermarine Swift Fighter
Length 2½ in. **2/–**

No. 692
5.5 Medium Gun
Length 5⅛ in. **3/4**

No. 736
Hawker Hunter Fighter
Length 2 13/16 in. **2/–**

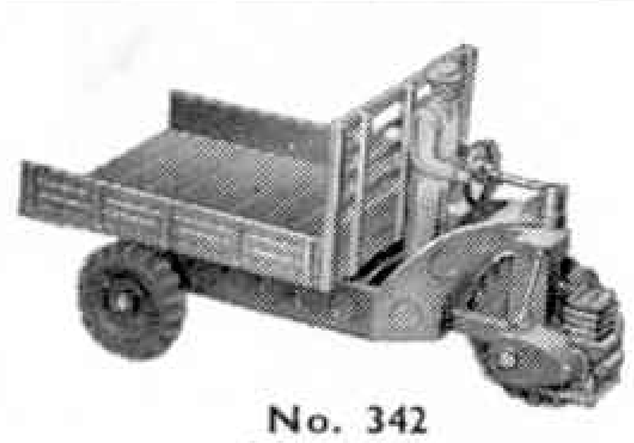
No. 621
3-Ton Army Wagon
Length 4½ in. **5/3**

No. 471
Austin Van "Nestlé's"
Length 3½ in. **2/9**

No. 412
Austin Wagon
Length 4⅛ in. **2/9**

No. 260
Royal Mail Van
Length 3⅛ in. **3/–**

No. 255
Mersey Tunnel Police Van
Length 2⅞ in. **2/9**



No. 342
Motocart
Length 4⅜ in. **4/3**

Prices include Purchase Tax

★ **IMPORTANT**

Due to the overwhelming demand for Dinky Toys and Dinky Supertoys, your dealer may not have the full range of models in stock.

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Euclid Rear Dump Truck
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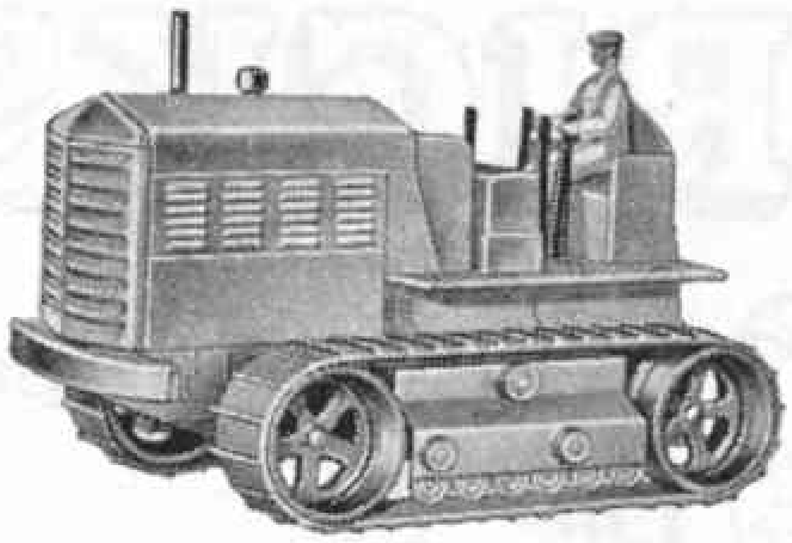
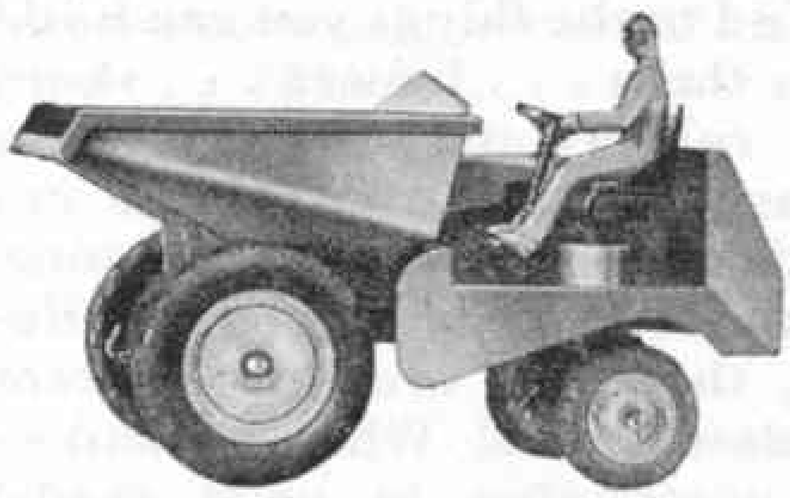
No. 999
D.H. Comet Air Liner
Wing Span 7½ in. **6/3**



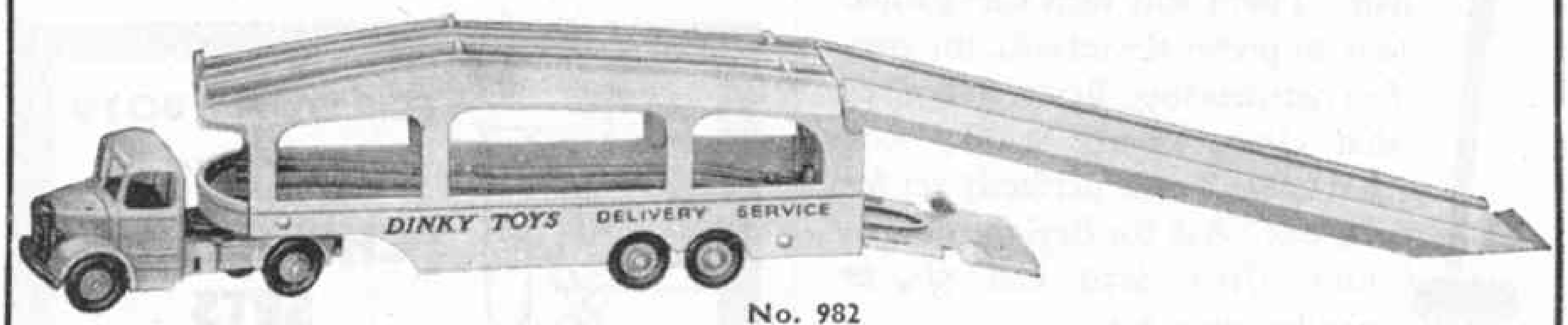
No. 963
Blaw-Knox Heavy Tractor
Length 4⅝ in. **8/-**

No. 971
Coles Mobile Crane
Length 6⅜ in. **10/9**



No. 962
Muir-Hill Dumper Truck
Length 4⅛ in. **7/3**

No. 903
Foden Flat Truck with Tailboard
Length 7⅜ in. **7/9**



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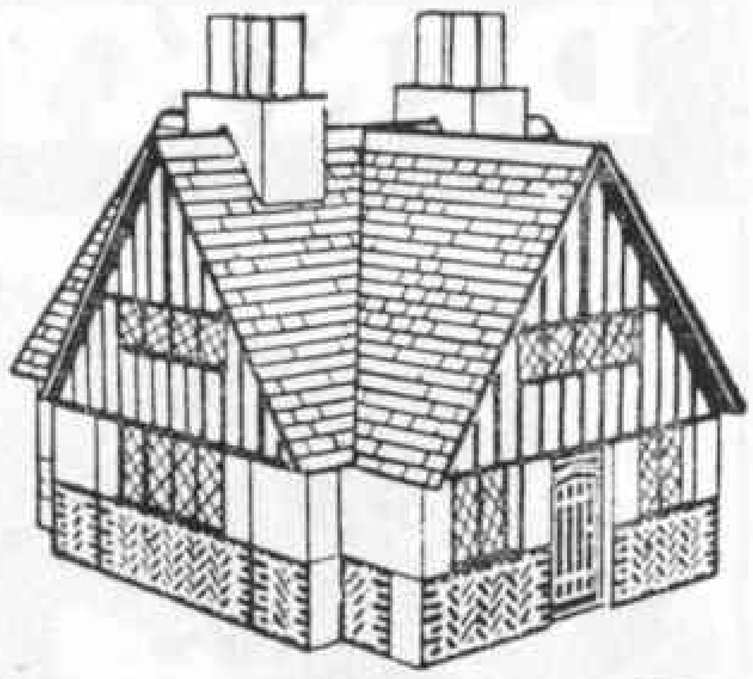

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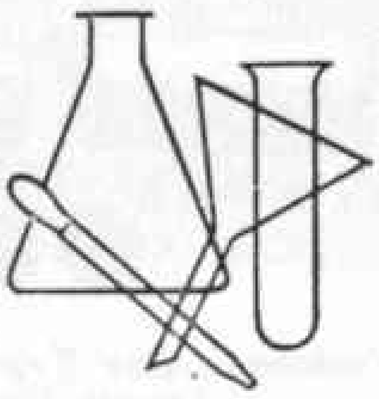

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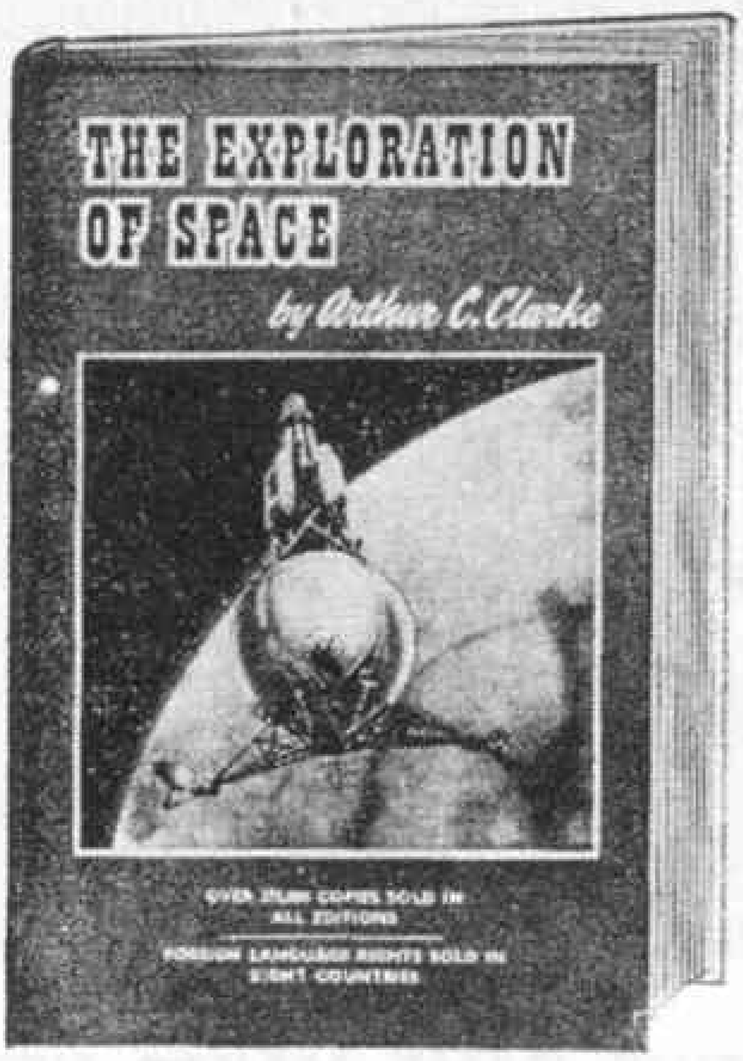

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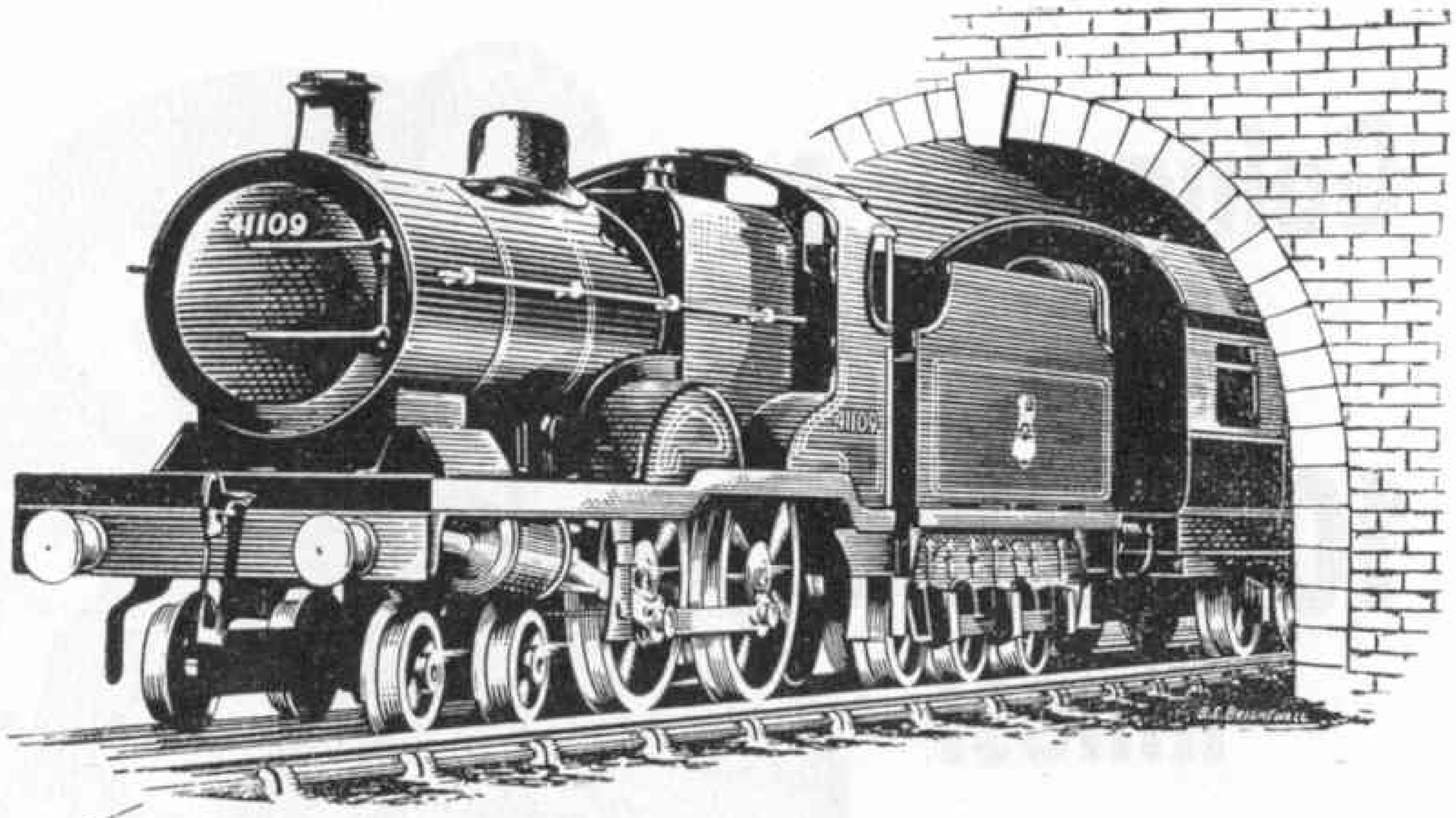

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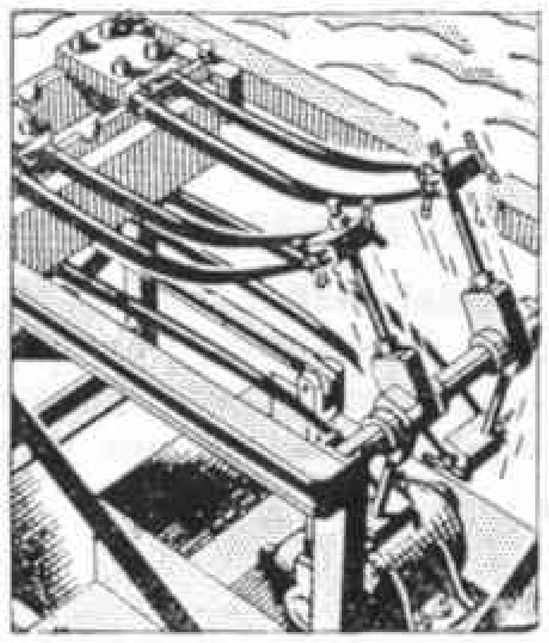

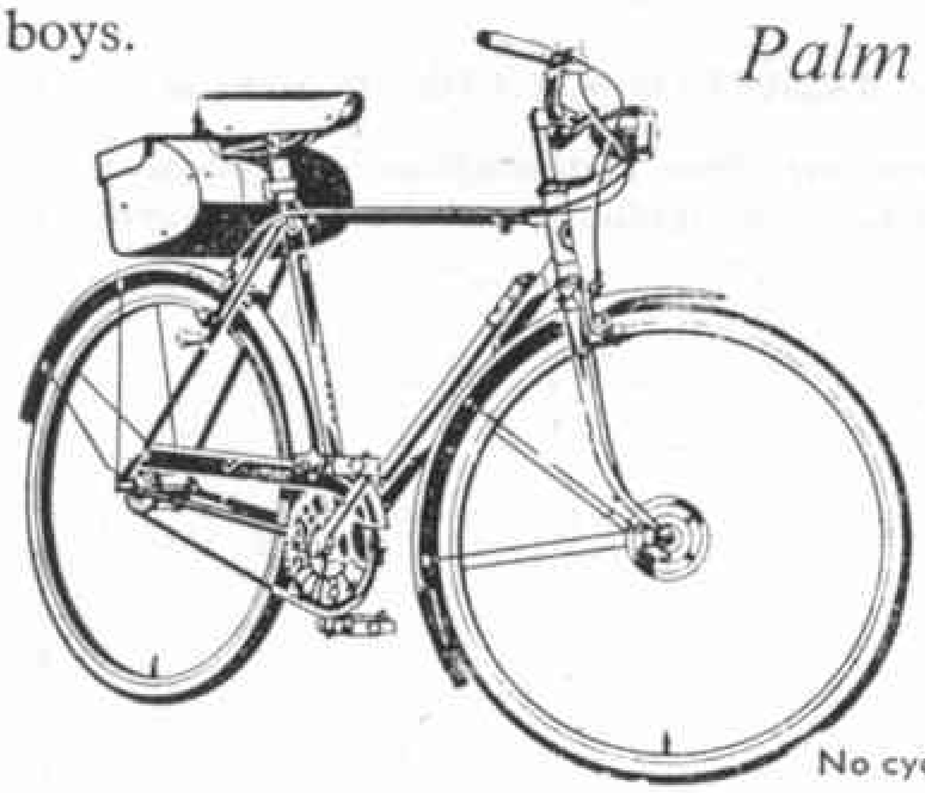

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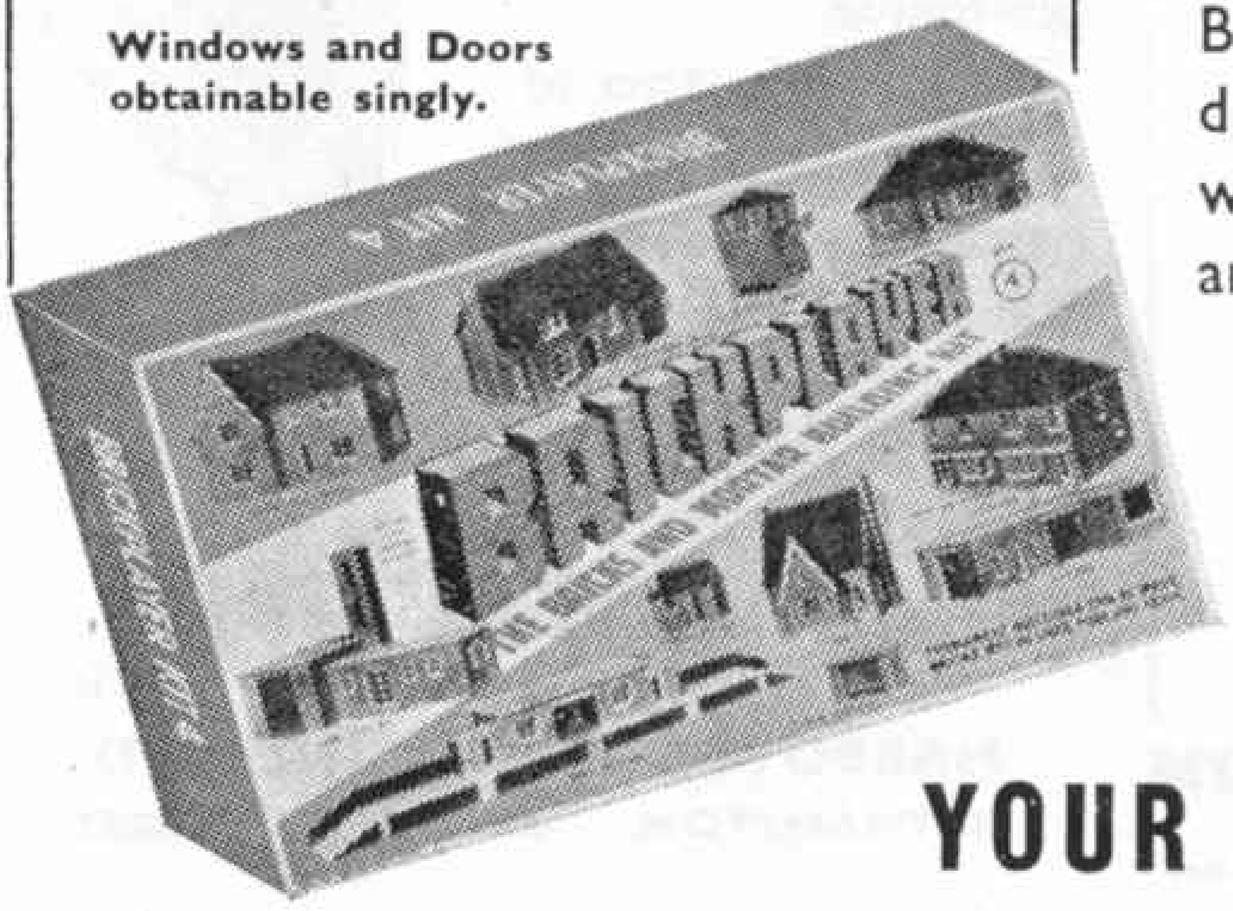

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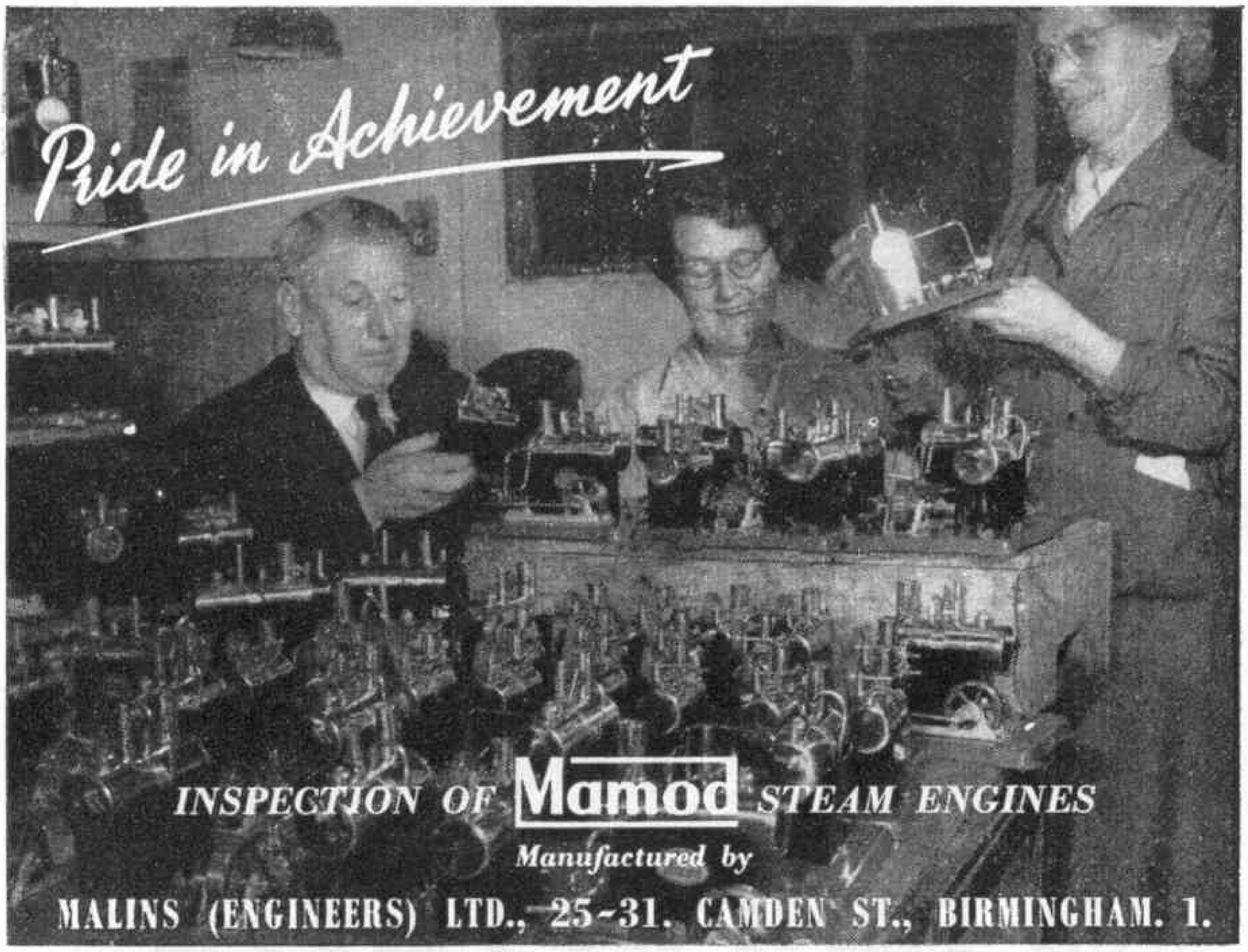
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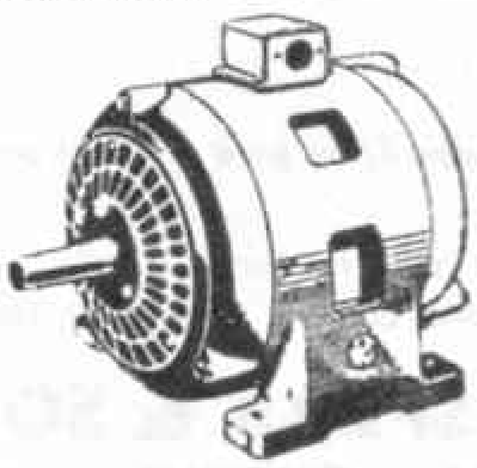

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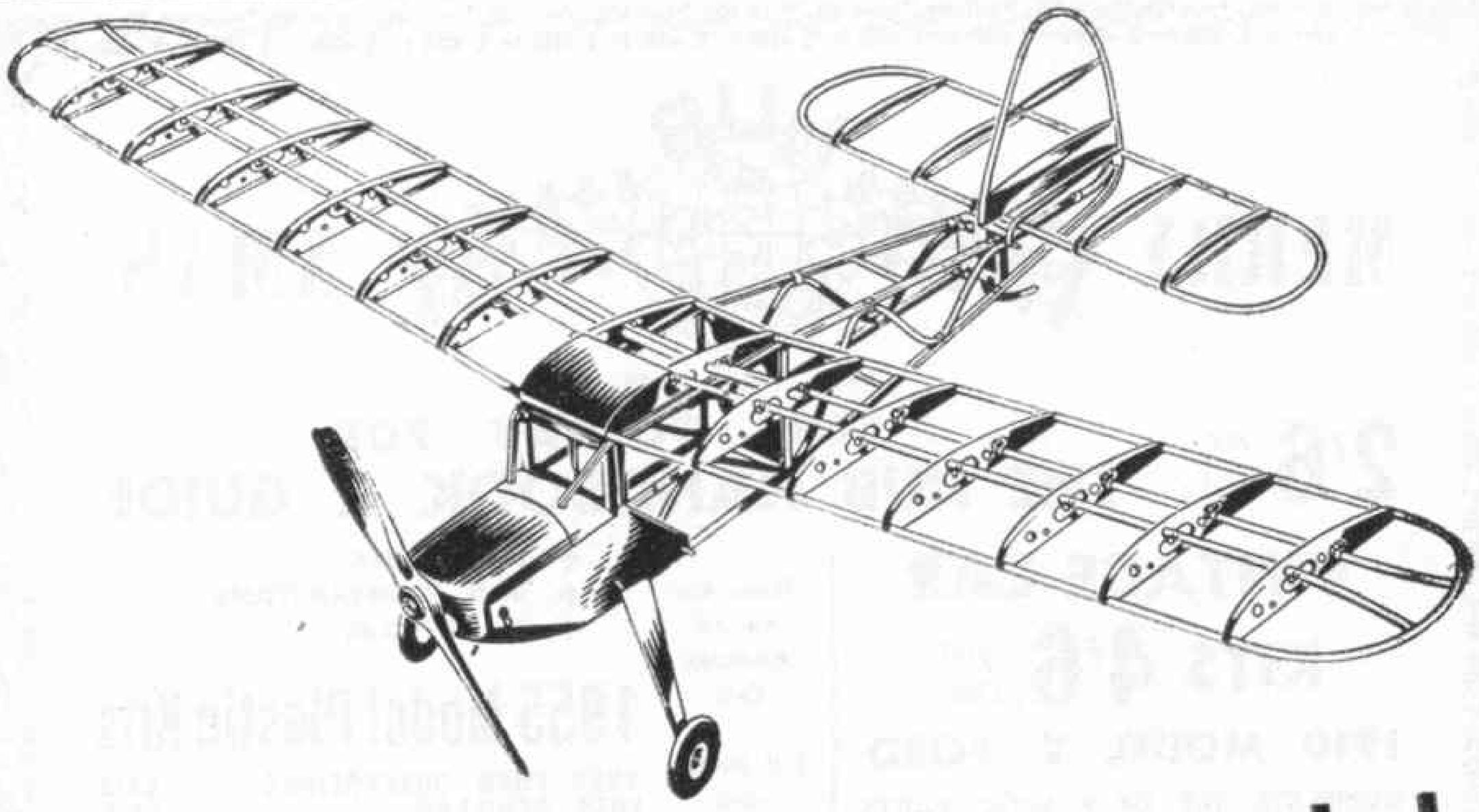
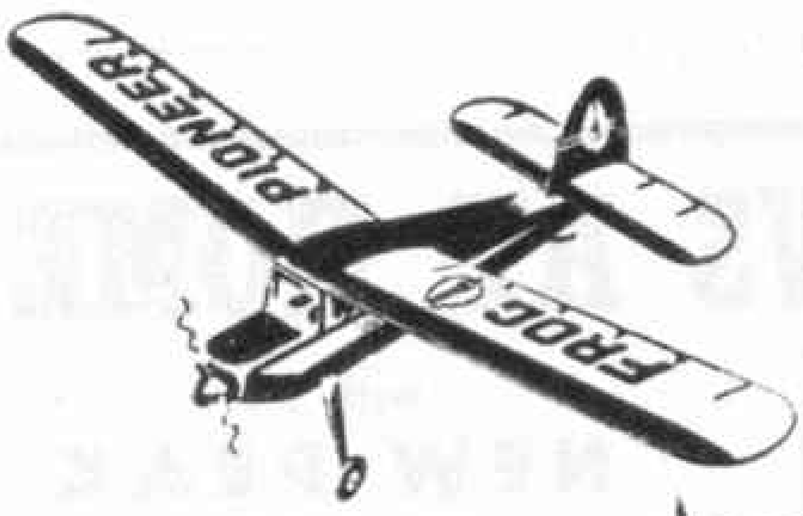


First ALL-METAL model



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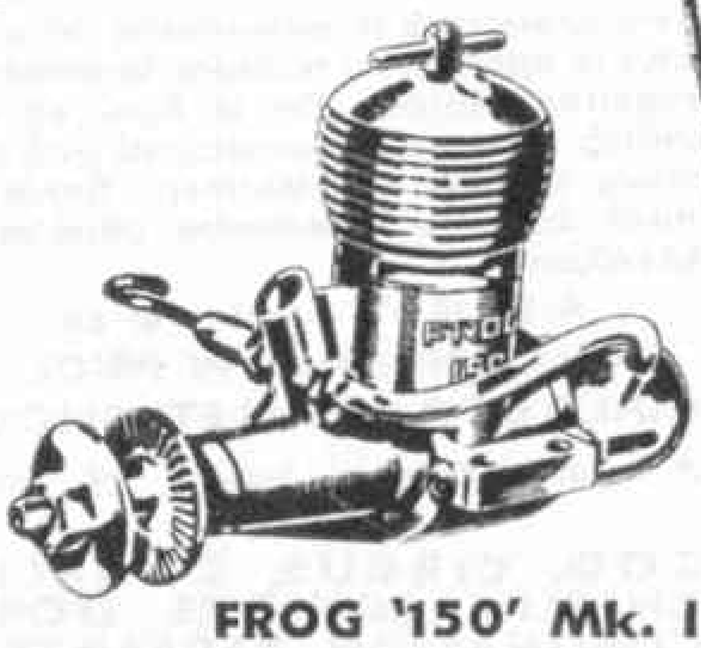

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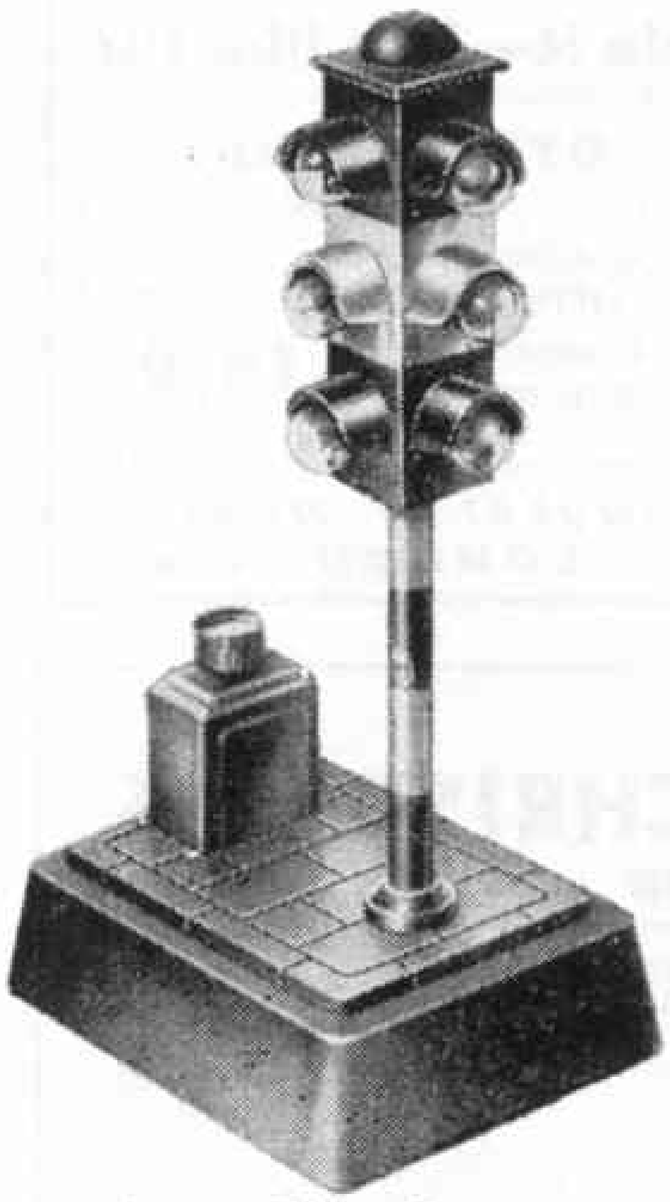

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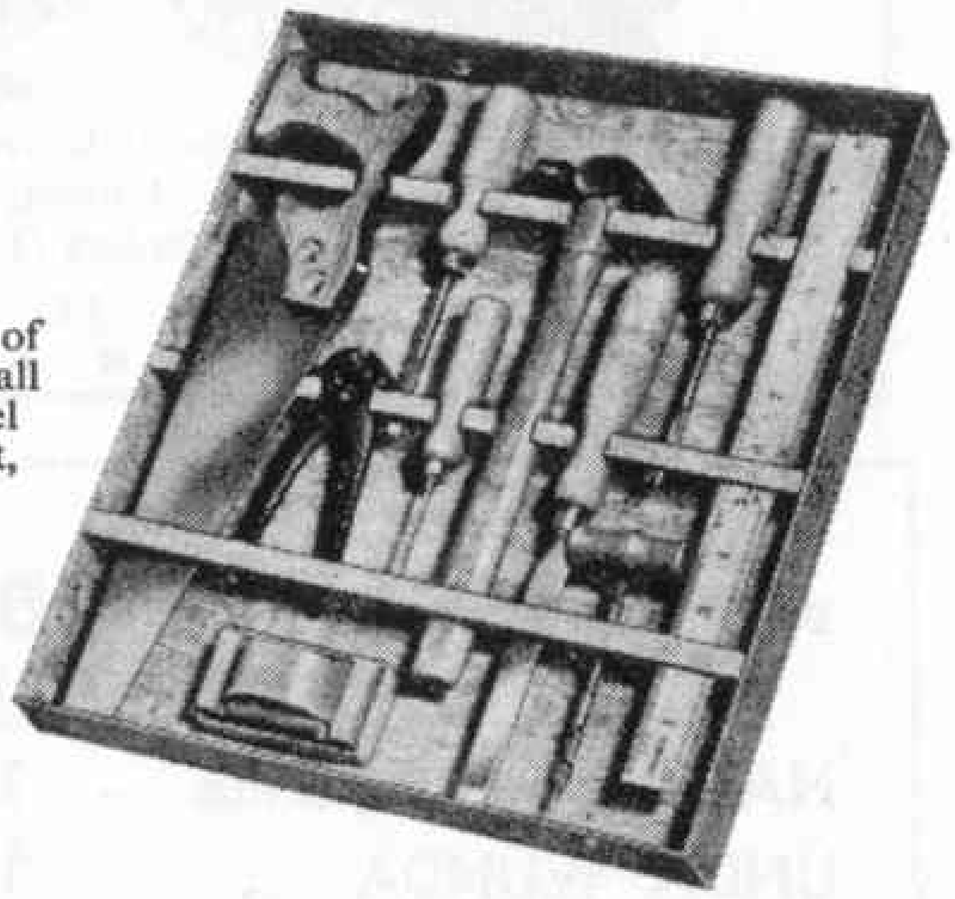

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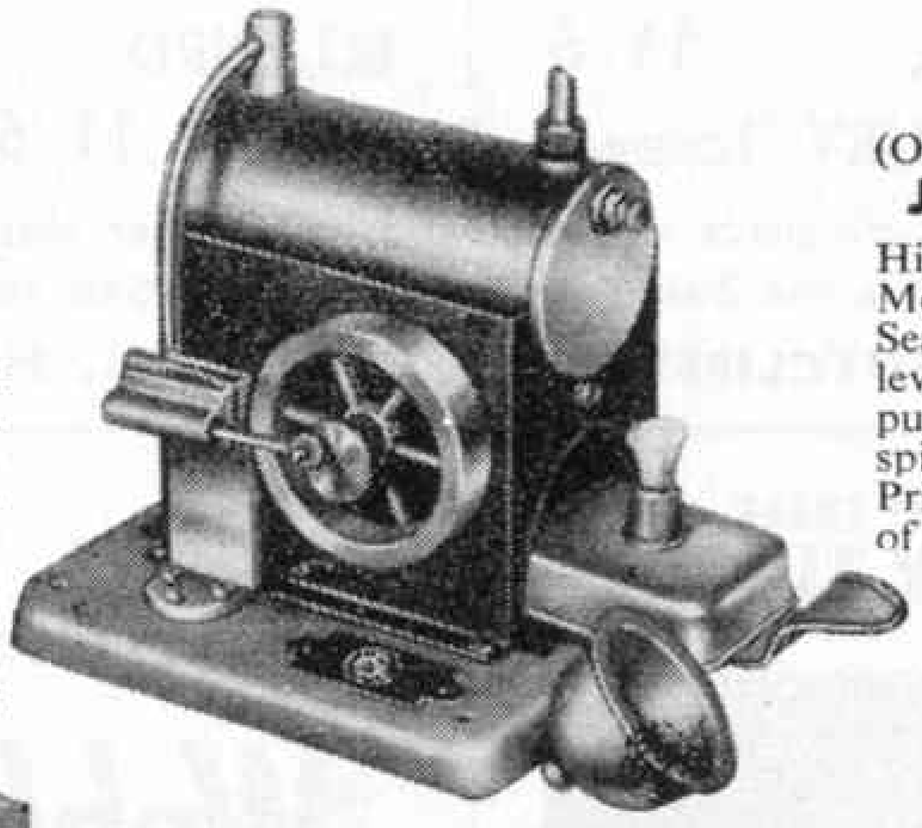

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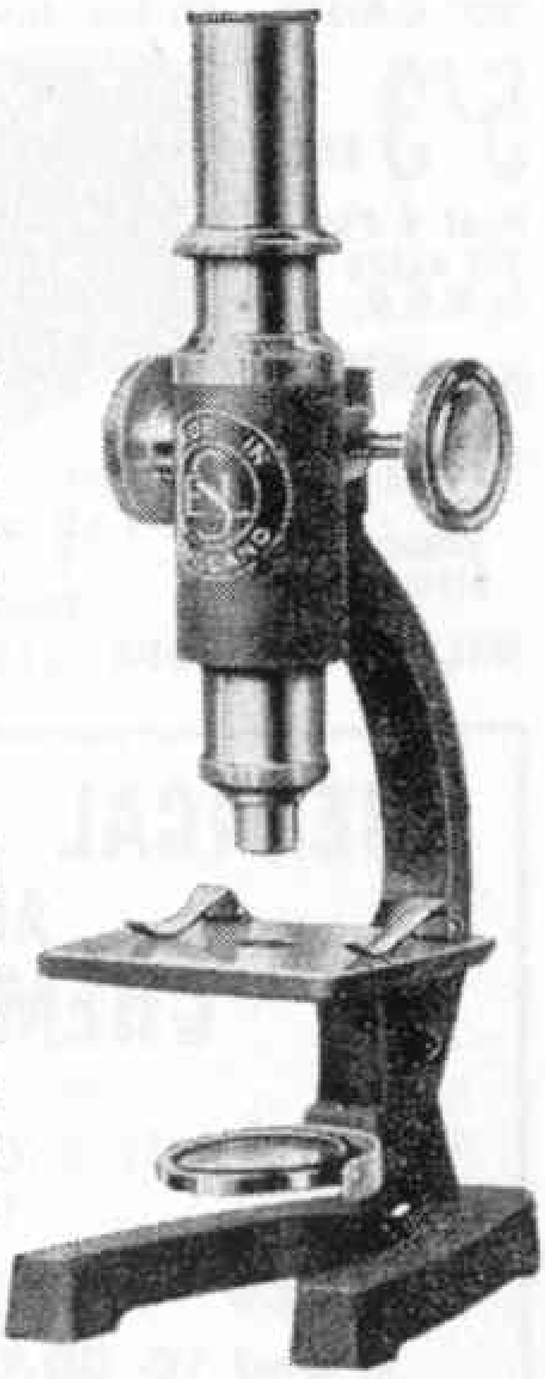

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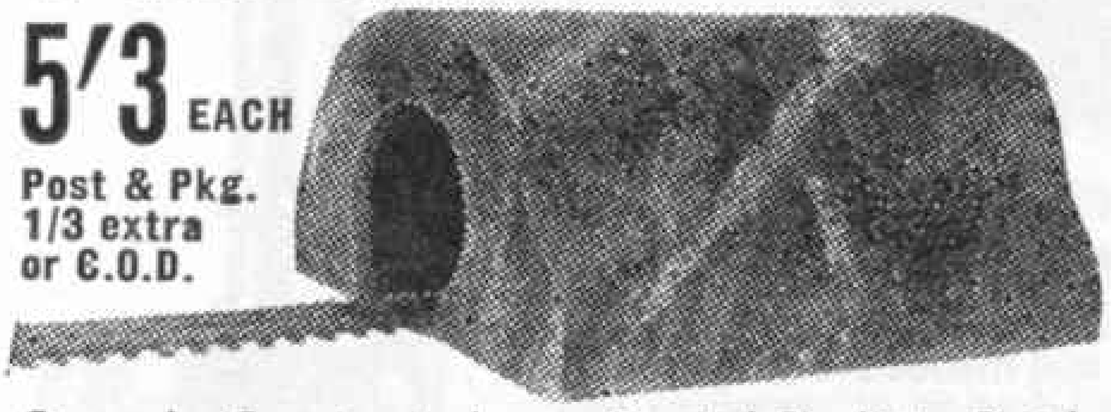

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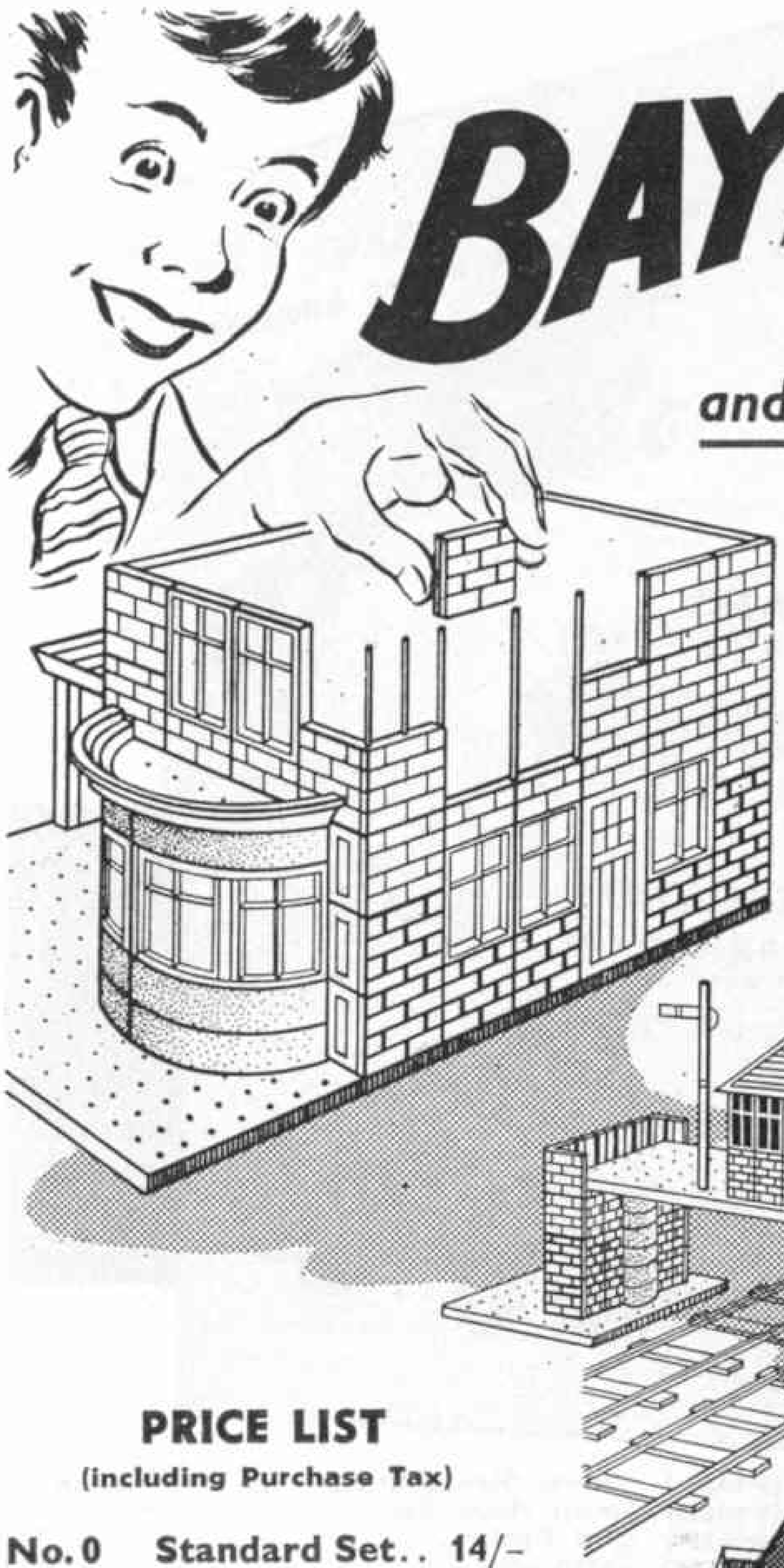

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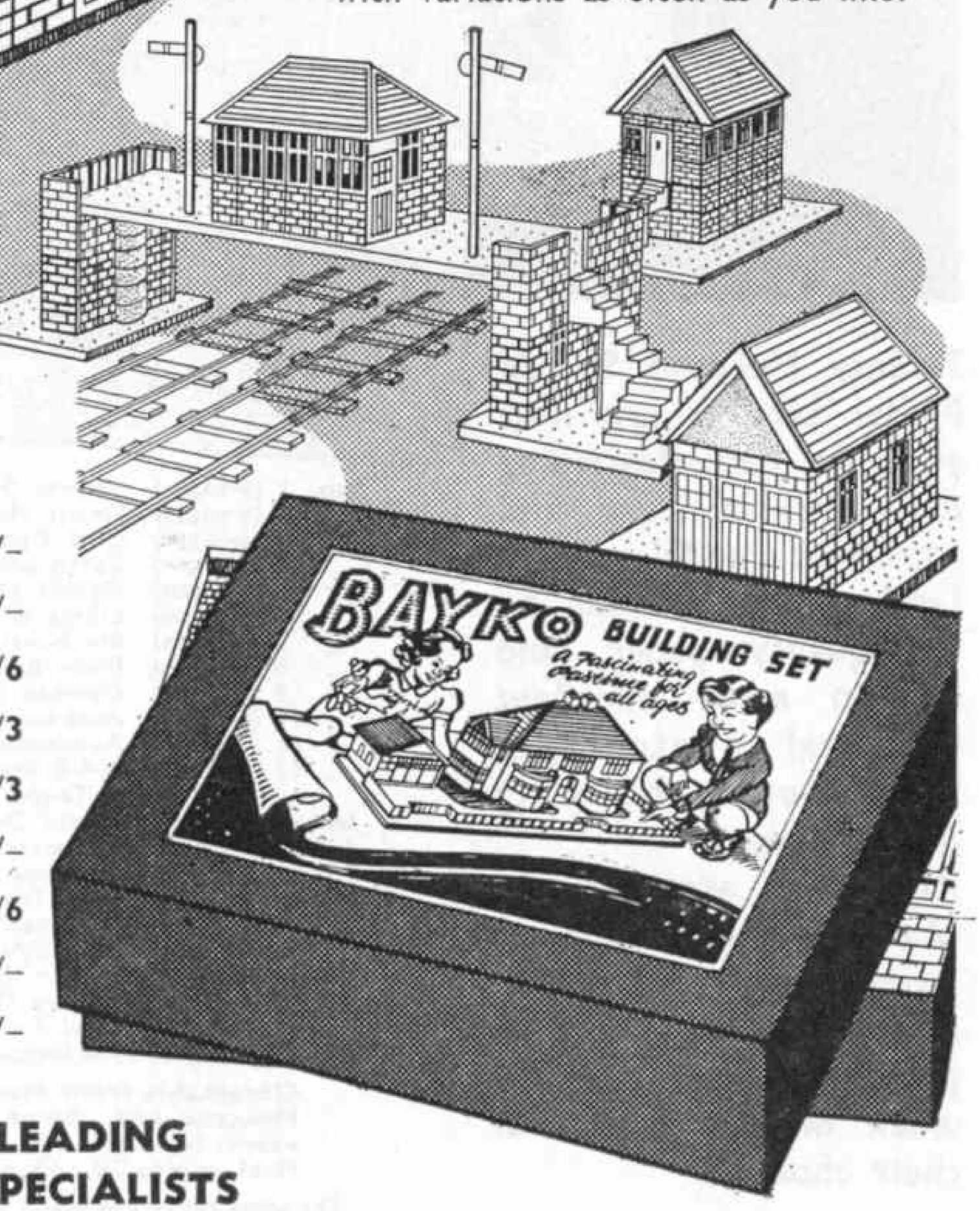

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Next Month: "THE SUGAR YOU EAT"

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EDITOR : FRANK RILEY, B.Sc.

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A World-Wide Christmas Greeting

The cover this month shows an unusual Christmas tree, for it is not the one that is seen in millions of homes throughout the world at Christmas, but is a holly tree. Holly of course is no less associated with Christmas than is the fir, and its brilliant red berries make a wonderful Christmas picture in good seasons.

One of the most interesting things about the holly tree shown on the cover is that it is owned by a railway. It stands alongside the main line of the Baltimore and Ohio Railroad at Jackson, in Maryland, about 35 miles north of Baltimore. It is believed to be about a century old and is certainly one of the largest holly trees in the Eastern States.

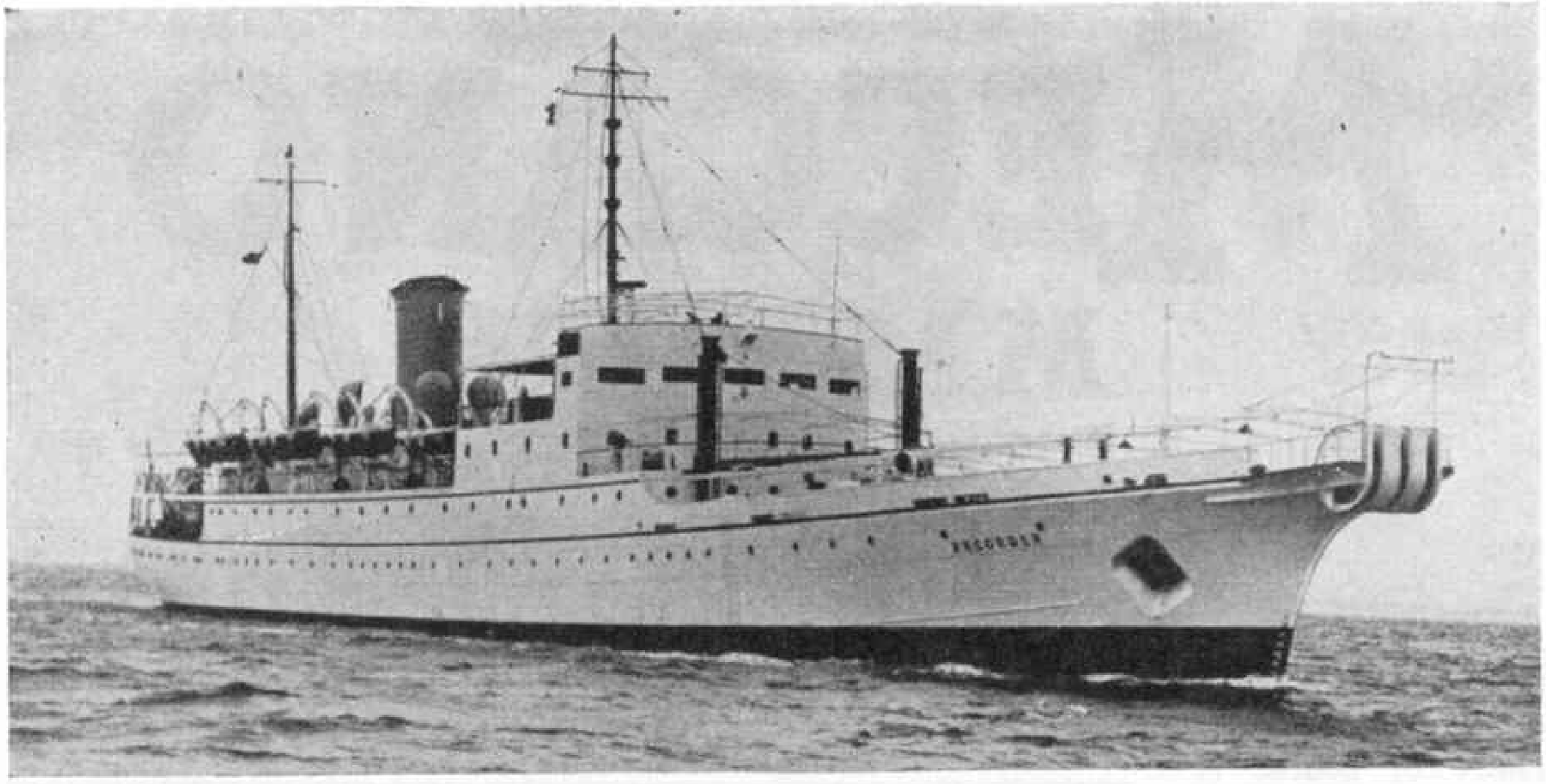
For years passengers on the B. and O. who happened to look out of their windows at the right moment admired the red-berried giant, and at length, 26 years ago, a Vice-President of the Road suggested that an acre of land around the tree should be bought. This was done. A high steel fence was built round the tree itself, and it was carefully looked after by the permanent way men.

Then, seven years ago, it was decided to do something more to share the beauty of the tree with others, and in December 1948 it was decorated and lighted. Now the tree lighting ceremony takes place every year in December, and my picture this month shows the President of the Railroad touching the switch that set the giant holly tree ablaze with light last Christmas. Other holly trees have been planted around it and soon this holly park will be a real Christmas paradise.

Mr. Howard E. Simpson, President of the Baltimore and Ohio Railroad, switching on the lights of the railway's holly tree in Maryland last December.

"Our Holly Tree," as the Railroad calls it, is today a symbol conveying Christmas wishes to millions of the people of the United States. Now, with the appearance of the tree on our cover, the Railroad joins me in sending Christmas greetings to *M.M.* readers in all parts of the world.

The Editor



Christmas Greetings by Cable

By W. H. Owens

OUR cable and wireless telegraph services, which play a key part in the day to day relations between all the countries of the British Commonwealth, are very much in demand at Christmas time. Last Christmas, for example, 65,047 individual greetings, totalling 873,388 words, were sent by people in Great Britain to friends and relatives overseas. And nearly as many were received at this end.

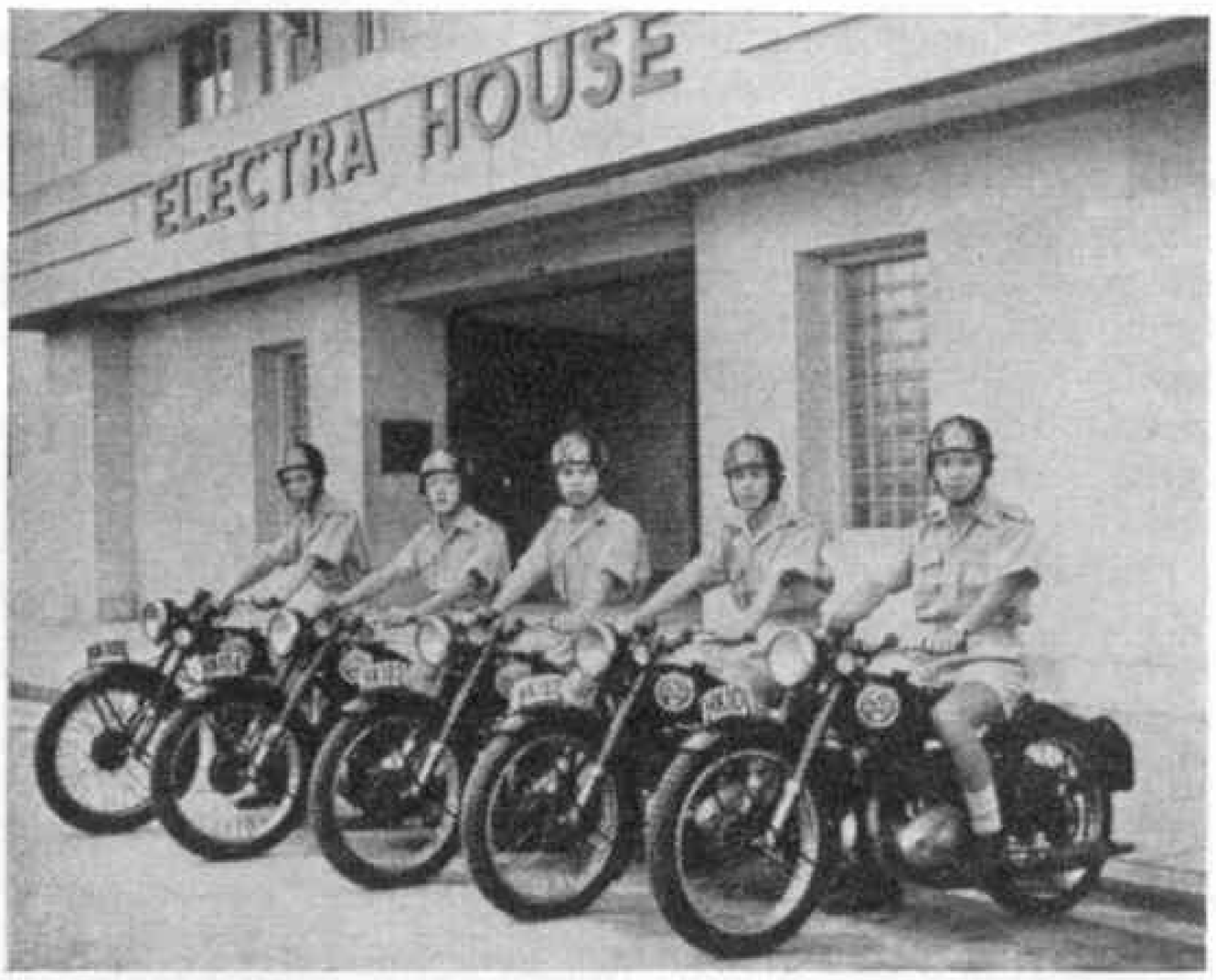
All this Christmas traffic is, of course, extra to the normal everyday flow of messages which is continuous, day and night, the whole year round. So the festive season is really a busy time for the duty staffs at the cable and wireless telegraph stations scattered far and wide, in an endless chain, across the world's continents and islands. Even so, they manage to keep up Christmas in the traditional way.

If you were sending greetings by cable to someone abroad, your message would leave Britain through the cable station in Porthcurno Cove, near Land's End. This lonely Cornish inlet is actually the beginning and end of the whole Commonwealth's submarine cable system, which is managed by Cable and Wireless Limited. The eleven cables that come ashore there link the United Kingdom with the world, through a network of 150,000 miles of submarine cable and some 200,000 miles of wireless circuits.

From Porthcurno, your greetings might take the eastern route, through the Mediterranean and on across the Indian Ocean, perhaps to India or Ceylon, Singapore, Hong Kong, Australia or New Zealand. Or they may go westward, across the Atlantic, where the cable system branches north through Canada to New Zealand and Australia, and southward to South Africa or Brazil and Argentina. The North and South Atlantic cable branches link in a circle through the West Indies, while the South African route extends across the South Indian Ocean to form a third route to the Australian continent.

Above is shown the cable ship "Recorder," the latest of the fleet of eight cable ships owned by Cable and Wireless Ltd., which ensure that faults in submarine cables are remedied at the earliest possible moment.

At widely scattered points along these lines of world communications there are some very lonely outposts, where Britons must be on duty over the Christmas holiday. For instance, there is the Cable and Wireless station on Direction Island, one of the Cocos group in mid-Indian Ocean. There, early on Christmas morning, the men will exchange greetings by radio with their nearest neighbour stations at Perth, Djkarta and Rodrigues, hundreds of miles away across the sea. But later in the day the station staff will celebrate



Christmas for the Cable and Wireless staff in Hong Kong will mean business as usual. Here are five of the Company's messengers ready to deliver Christmas and other messages reaching Hong Kong.

Christmas together, like a family at home, enjoying turkey, plum pudding and other seasonable fare that the supply ship from Singapore delivered to them with the Christmas mail.

The same traditional fare will be on the Christmas Day menu at all the other 131 stations operated by Cable and Wireless Limited in British Colonial territories and by its associated companies in foreign lands. And Christmas dinner will be eaten under every sort of climate, from tropical sunshine to mid-winter snows. But lines of communication must be kept open all the time. So technicians and other staff will arrange turns of duty over Christmas Day to ensure that there is never any delay to traffic.

Although travel by land, sea and air becomes faster all the time, cable and wireless telegraphy still provide the speediest method of communication known to man. Through the thousands of miles of submarine cables, and the land lines that join up with them, a message may be sent right round the world and back again all within the space of a minute. This was demonstrated at the Cable Centenary Exhibition held in London five years ago. The opening message sent out from the Science Museum at Kensington travelled 33,871 miles, was tape relayed four or five times, and was received back in London again in 53.6 seconds.

Cable ships ply to and fro across the oceans to maintain these global communications. For although the submarine cables are well protected in stout waterproof casings, faults do occur from time to time. They are sometimes damaged by the impact of drifting rocks, anchors or fishermen's trawling gear. Cables have also been cut on occasion as a result of volcanic disturbances on the sea bed. So repair ships are stationed at strategic bases throughout the world, ready to steam at full speed wherever they may be directed to carry out repairs. During an average year's work a cable ship may sail something like 29,000 miles.

The crews of the cable ships may spend Christmas almost anywhere, though special consideration is given to their whereabouts at this time so that if possible crews can be in port on 25th December. But a sudden fault in an ocean cable, or a difficult repair job, often makes it necessary for a ship to be at sea throughout the holiday. All aboard her will concentrate on getting the work done as quickly as

The cable ship "Mirror" lying at anchor off St. Anne Island, Mahe, Seychelles. If possible the ship will spend Christmas in port, but the sudden development of a fault may take it to sea at any moment.

possible, postponing their own celebrations until it is completed.

To meet all eventualities, preparations for Christmas aboard the cable ships often begin far ahead. If a ship happens to call at a port where turkeys are available even as early as October, a supply of the birds will be in the ship's freezer by the time she is ready to put to sea again. Similarly, other items of Christmas fare are taken aboard wherever they are to be purchased. So, when the crew can relax and enjoy their own festivities, everything is ready to hand.

Certain traditional customs are observed by Cable and Wireless vessels if they should be on passage to or from a job on Christmas Day. At eleven o'clock in the morning, for example, when the Sun is over the foreyard, officers and petty officers gather together to drink to the health of the Chairman of the Company. As a rule, a holiday is declared for all hands except the watch-keepers.

The all-steel band of the cable ship "Electra," which no doubt will help to provide Christmas entertainment on board the vessel.

Christmas in port, of course, gives everybody the chance to relax and enjoy themselves. It does not matter what part of the world they happen to be in, the festive season is celebrated in the old British way. There is a dinner on board on Christmas night in the decorated saloon at which, in accordance with tradition, all officers are expected to be present. Towards the end of the meal, the ship's chef enters carrying the Christmas pudding, blazing furiously on its dish. Afterwards the Captain and officers drink a toast to him in appreciation of the excellent fare he has prepared for them.

Cable ship crews are quite expert in arranging impromptu entertainments. In one vessel, the *Electra*, West Indian members of the crew have formed an all-steel band of the type that enjoys so much popularity in their home islands. You may have heard one of these West Indian bands on radio or television. Their instruments are all home-made, and include a billy can, an oil drum, a crowbar, a paint can, a cigarette tin filled with steel oddments, and a rope thimble, which serves as a triangle.

A fault in a submarine cable is detected by engineers at coast stations, who chart its position by means of electrical instruments. The nearest cable ship is then directed to the area where the fault lies. The cable is found by dragging a pronged grapnel across the route on the sea bed until a "bite" indicates that the cable is found. The faulty section is hoisted aboard and made fast to the bows for examination, repair and testing.

Crews certainly deserve their Christmas break—if they can get it—for work aboard a cable ship often means long hours in all weathers, and in very difficult conditions. Raising a damaged cable from the sea bed in a heavy ocean swell or raging gale is extremely hazardous. But the worst weather never daunts these engineers of the sea.

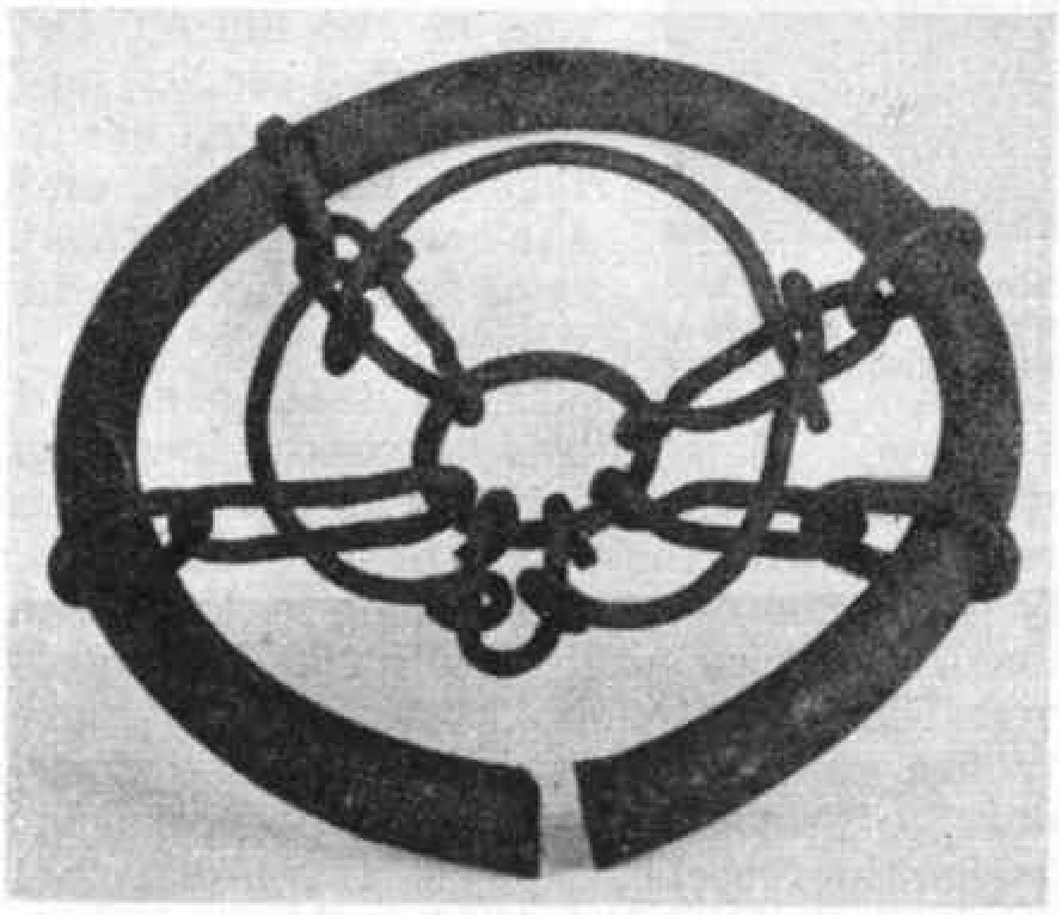
Indeed, our good wishes should go out to all the many thousands of Cable and Wireless personnel, whether ashore or afloat, this Christmas. For thanks to the efficiency of this wonderful service, Britons exiled in far-off parts of the Commonwealth can receive greetings from home on Christmas morning. To anyone thousands of miles away from loved ones at this season of the year, a cable from home is the best of all Christmas presents.

Snowshoes for Horses

By Francis Dickie

IN one unique way old dobbin still remains man's best means of transport. What this is, few would ever guess, for it is so unusual. Only a few northern packers in the remote mountain regions of British Columbia work horses on *snowshoes*. Most people in the outside world, and even in British Columbia itself, have never heard of it.

Even the few northern packers who occasionally use the snowshoes on horses do not know the name of the inventor. It is only known that he was an experienced man in other methods of packing in the Lardo mountain region of British Columbia. There, for a time, a number of small mines were set up in difficult high altitudes, where snow was deep. During the summer all supplies were packed in on the *backs* of horses. And some amazing things were transported, even a piano for a dance hall. But when winter arrived the camps had to close, as needed supplies could no longer be brought in that way. So this unknown inventor, after some experimenting, produced a horse snowshoe!



A horse snowshoe made of iron piping. The webbing may be iron rod, as in the picture, or steel mesh.

The frame is 12 inches in diameter. It is made of ¾ inch iron pipe bent circular by the camp blacksmith. The mesh in some shoes is steel chain. In others, as shown in the lower illustration on this page, which is a quarter actual size, it is

When a shoe becomes loose the horse stops and waits for the driver to adjust it.

made of one-quarter inch rod iron. This mesh serves the same purpose as the gut webbing in a snowshoe used by man. Webbing is the secret of all snowshoes, as it allows a vent, so that the shoe does not drive a hole into the snow. The three curved longer bars of quarter-inch rod iron are the clips fastening over the hoof

Steel, dynamite, all food supplies and lumber were transported with the aid of the shoes. Even complete mills were knocked down and carried to difficult high places. Each horse draws a sleigh, commonly called a "go-devil." To achieve very great altitudes, switch-back roads were often constructed. Sometimes as many as 30 horses form a caravan, that is 120 shoes. The first three sleighs are lightly loaded to break trail. After these come ever heavier loads till a maximum of 400 lb. is reached.

Those inexperienced with horses would at once conclude that the chief drawback would be the horses. Oddly enough, this is not so. An experienced northern packer assured the writer that generally within an hour most horses accustomed themselves to using this unfamiliar gear. There were a few exceptions, usually highly nervous animals. Usually it was the clanking noise that troubled them.

Unusual Jobs for Railway Engines

By R. S. McNaught

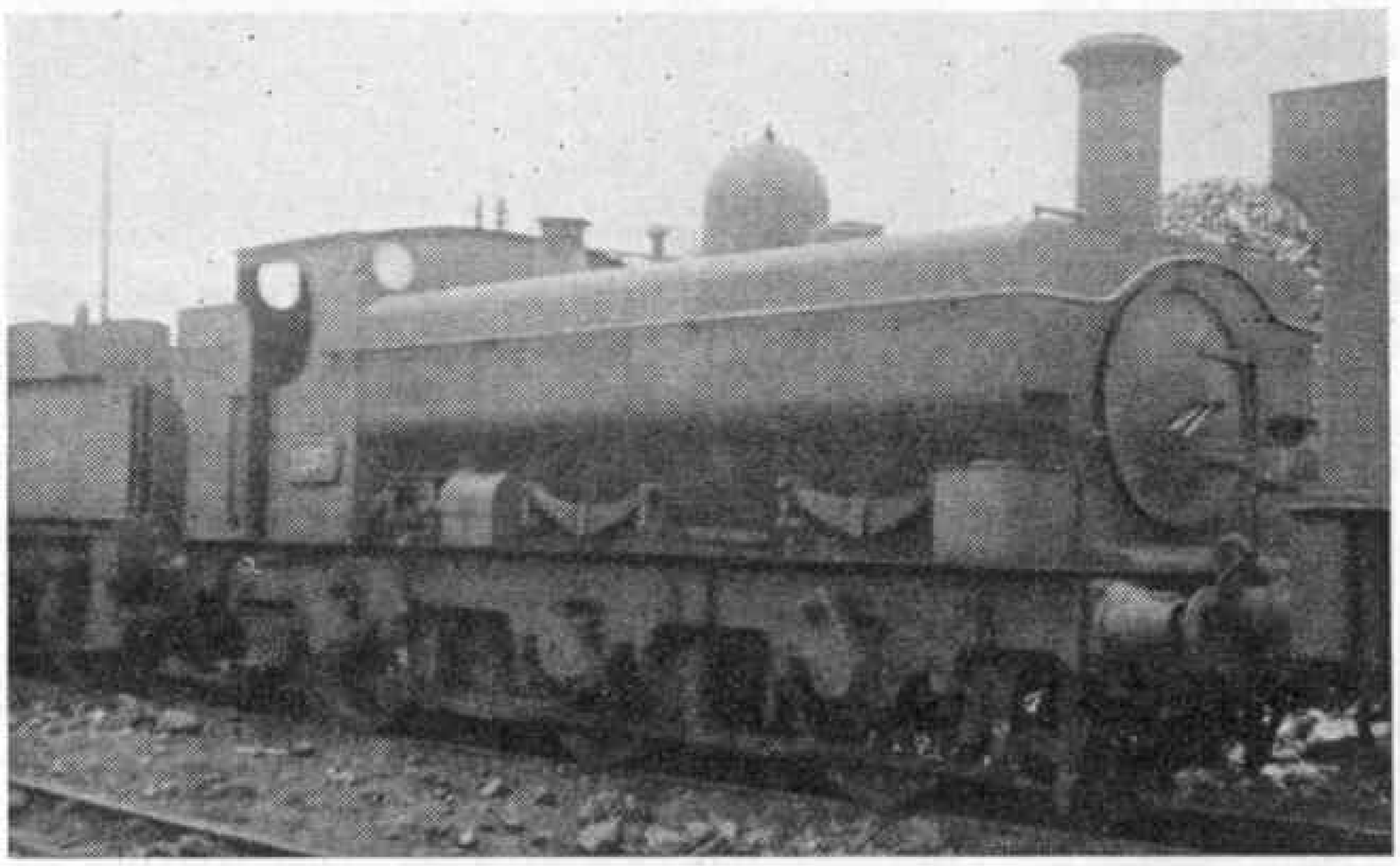
IT is not often that we hear of railway engines being used for any other job than the one for which they were built, but in recent days three instances have come to light. This "sudden rush" made me wonder what other cases could be found, and I have come across many further examples, some of them as unexpected as they were ingenious. A well-known railway writer of the past said some years ago that "everything that could be said about railway engines has been said." How wrong he was!

The first recent example of an engine's strength being used for an out-of-course job took place at Knebworth, on the old Great Northern main line, where three of the staff (a signalman and two porters) who take a pride in the flowerbeds at their station decided on a Coronation clean-up. This involved the removal of a twelve foot tree trunk on the down platform, and much manual labour was saved by roping the tree to a convenient engine which quickly hauled out both tree and roots in one pull!

The next instance also comes from the Eastern Region. Two of whose ever-willing O4's—Great Central 2–8–0 design, mostly ex-R.O.D.—were called upon to act as tugs at the port of Immingham on one occasion. During the night of the East Coast floods of January 1953, the steamer *Hebble* overturned in dry dock there, providing a salvage problem indeed. It was decided to see what the Motive Power Department could do. Four steel pillars were welded to the side of the steamer's hull. Attached to these were steel ropes run through a series of pulley blocks, the four being spliced to a single very strong steel cable led to the railway sidings adjacent. The two engines were attached to this cable, and as they were screened from the overturned ship by intervening buildings, orders were given to them by the controller of the whole operation by radio. The pull to be exerted by the engines was arranged to register upon a dial set up on a flat truck coupled to the tender of one of them, mirrors being so arranged that the dial could be read from the footplate.

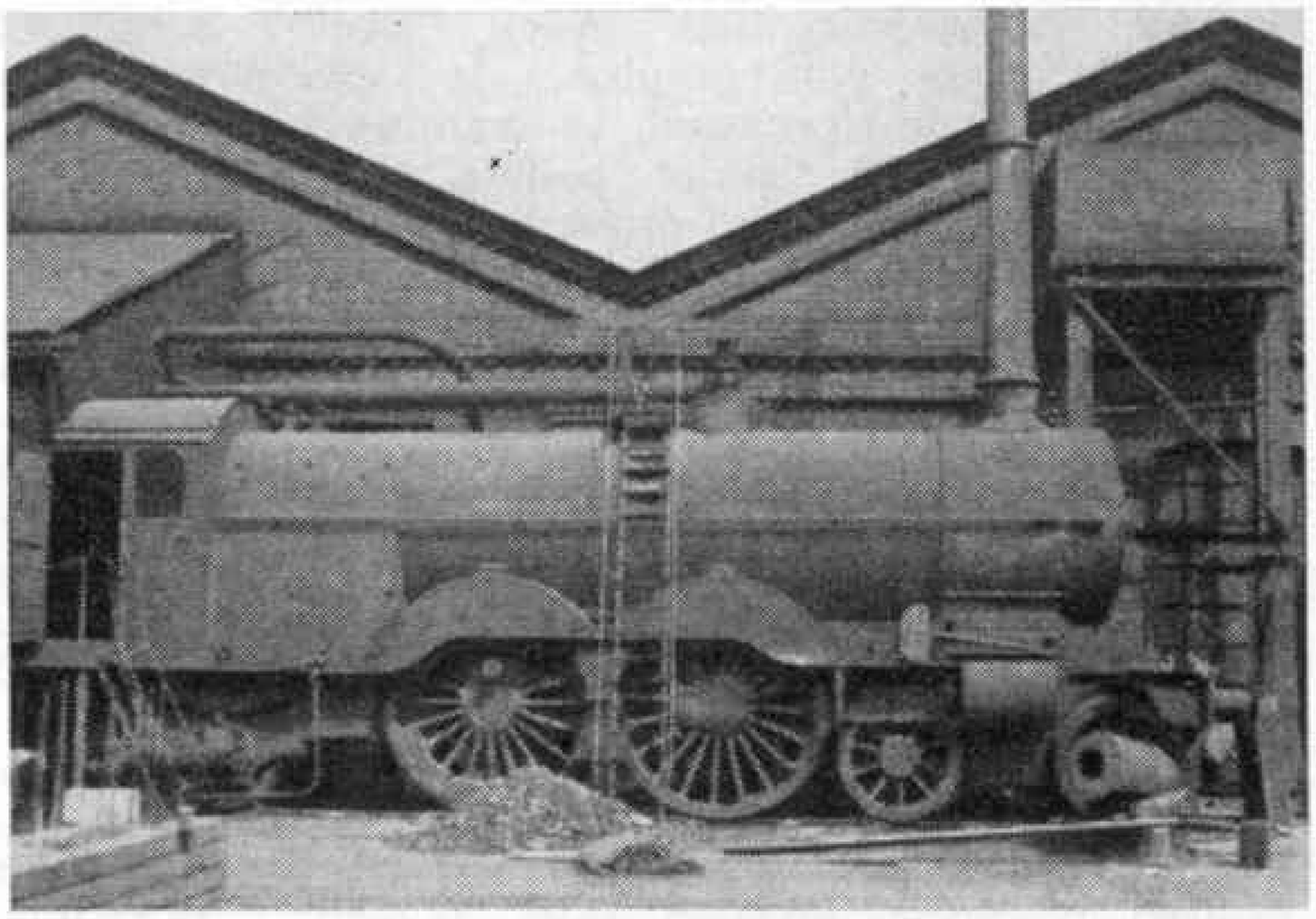
When all was ready, the O4's moved slowly ahead and when the slack of the cable had been taken up, water was let into the graving dock. The *Hebble* became water-borne and as she did so, the steady pull on her hull laterally enabled her to regain buoyancy, and she was soon afloat once more in an upright position.

This well-planned and successful idea was by no means original, although certain features were, including the use of radio. Towards the end of the 1914-18 War, the South Eastern and Chatham Railway's cross-Channel steamer *Onward* was gutted by fire alongside the quay at Folkestone, and the weight of water pumped into her caused the vessel to capsize. It was essential to clear the berth for troopships, and in order to get *Onward* upright again, some small 0–6–0 Stirling tanks, the heaviest engines able to traverse the Folkestone Harbour line, were pressed into service as tugs. The arrangements of steel wires were much more rough and ready than on the Immingham job, but the little fellows accomplished their task.



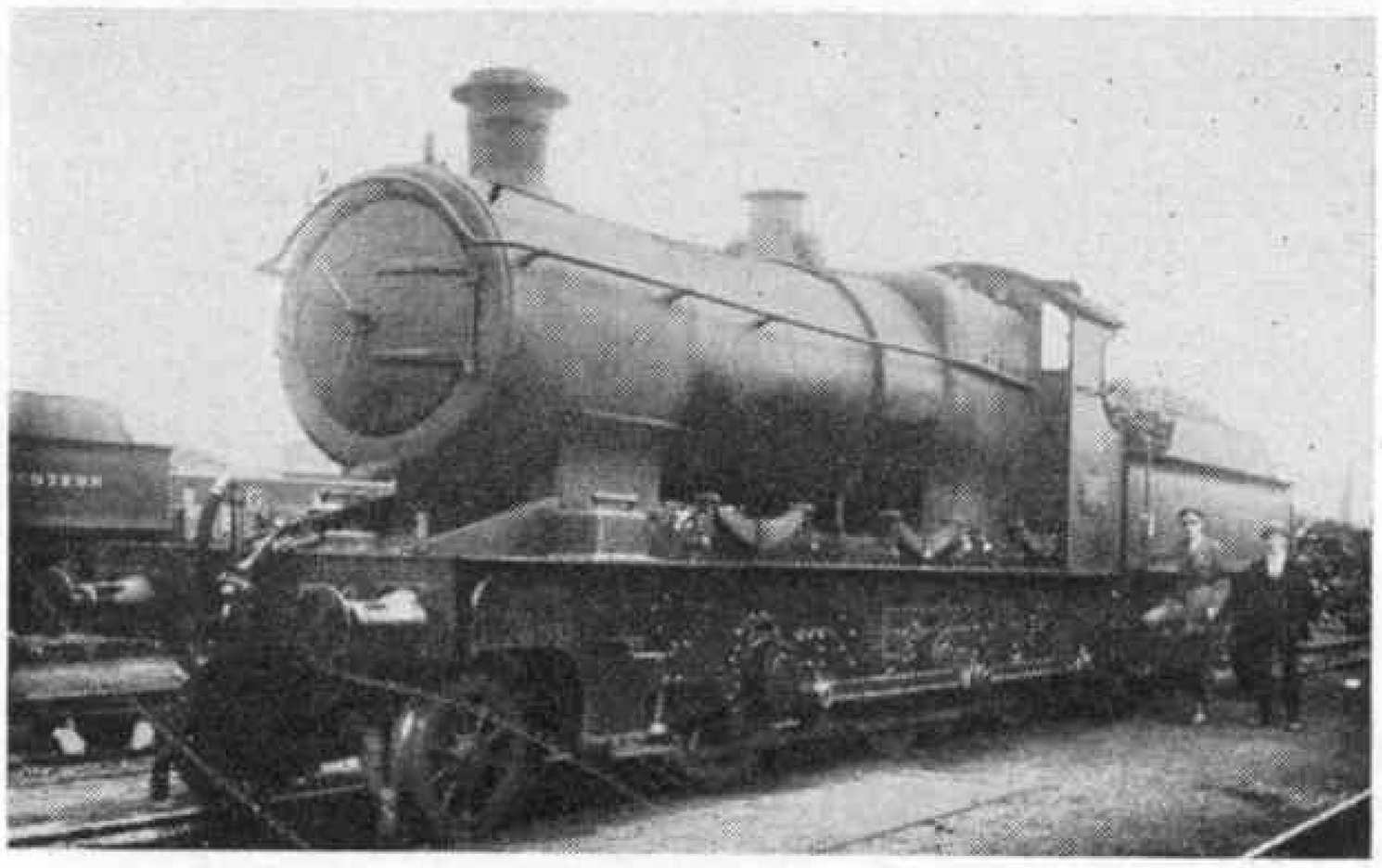
No. 1287, the last G.W.R. pannier tank with outside frames, photographed in June, 1953, by A. R. Brown, with other condemned engines at Swindon. The engine was withdrawn in 1946 and was then used as a stationary boiler at Leamington.

The third instance in recent times of a railway engine getting itself mixed up in maritime affairs and proving very useful in an unconventional way was recorded when a series of U.S.A-built locomotives were shipped abroad, the final stage of their delivery trip involving up-river travel on flat-topped motor barges. One barge, with a locomotive secured to a section of rails on its deck, broke down and was carried by the tide in the river estuary on to a mudbank. There it remained, despite the efforts of a tug of considerable power which hastened to the scene. Various other methods of releasing the stranded barge also failed, and it seemed that the new locomotive would either have to be unloaded piece by piece or remain idle and exposed to the weather until the next high tides.



An Ivatt Atlantic, formerly L.N.E.R. No. 4419, with rods and motion down, acting as a stationary boiler at Doncaster Works. The extension chimney is plainly shown. Photograph by R. C. Anthony

In the last resort it was decided to see whether the engine could help itself. So after fuel and fresh water had been taken to the barge and much lubrication of its motion had been completed, the railway engine afloat was attached to a long wire rope, which in turn was made fast to a special mooring-anchor in the river a considerable distance away. When steam had been got up, the regulator was opened, and as the wheels turned, the barge began to glide slowly backwards under the engine and was soon freed from the shoal.



A G.W.R. "Aberdare" 2-6-0 No. 2659. One of the class was used for "train busting" target practice by the R.A.F. and subsequently repaired. Photograph by H. Gordon Tidey.

The last of the Great Western 0–6–0 saddle and pannier tanks to have double framing and outside cranks was an indoor resident at Leamington Shed for steam-raising purposes, and this enabled it to outlive all the others of the class for a considerable time before finding its way to Swindon for execution. She was No. 1287, withdrawn from service in 1946 and broken up in 1953. Some of the celebrated former Great Northern Atlantic class were also found to have boilers good enough still for this secondary sort of work. One of these is seen in the above illustration, and is of additional interest in that it is fitted with a large side-window cab and reduced boiler fixtures. No. 4419 (L.N.E.R.) was a great favourite for a time on some of the crack Pullman services.

It will be noticed that a long extension has been added to the chimney to obtain draught, and that the dome cover has been removed and a steam-valve fitted. Despite these modifications, and the removal of side-rods and motion, the old flyer appears to me to retain the air of fat superiority that characterised the Ivatt Atlantics.

The use of old boilers for steam-raising at locomotive depots is very common, and some interesting relics can be located at times, although they are often overlooked by parties of visiting enthusiasts whose

interest is concentrated upon "live" occupants and photography. It was fascinating, on one occasion, to examine a pair of singularly slender boilers at a Western Region shed and prove by finding the numbers still stamped upon them that they were originally mounted upon long defunct Dean 2–4–0's. One use made of this pair was to give young cleaners their first feel of the fireman's shovel.

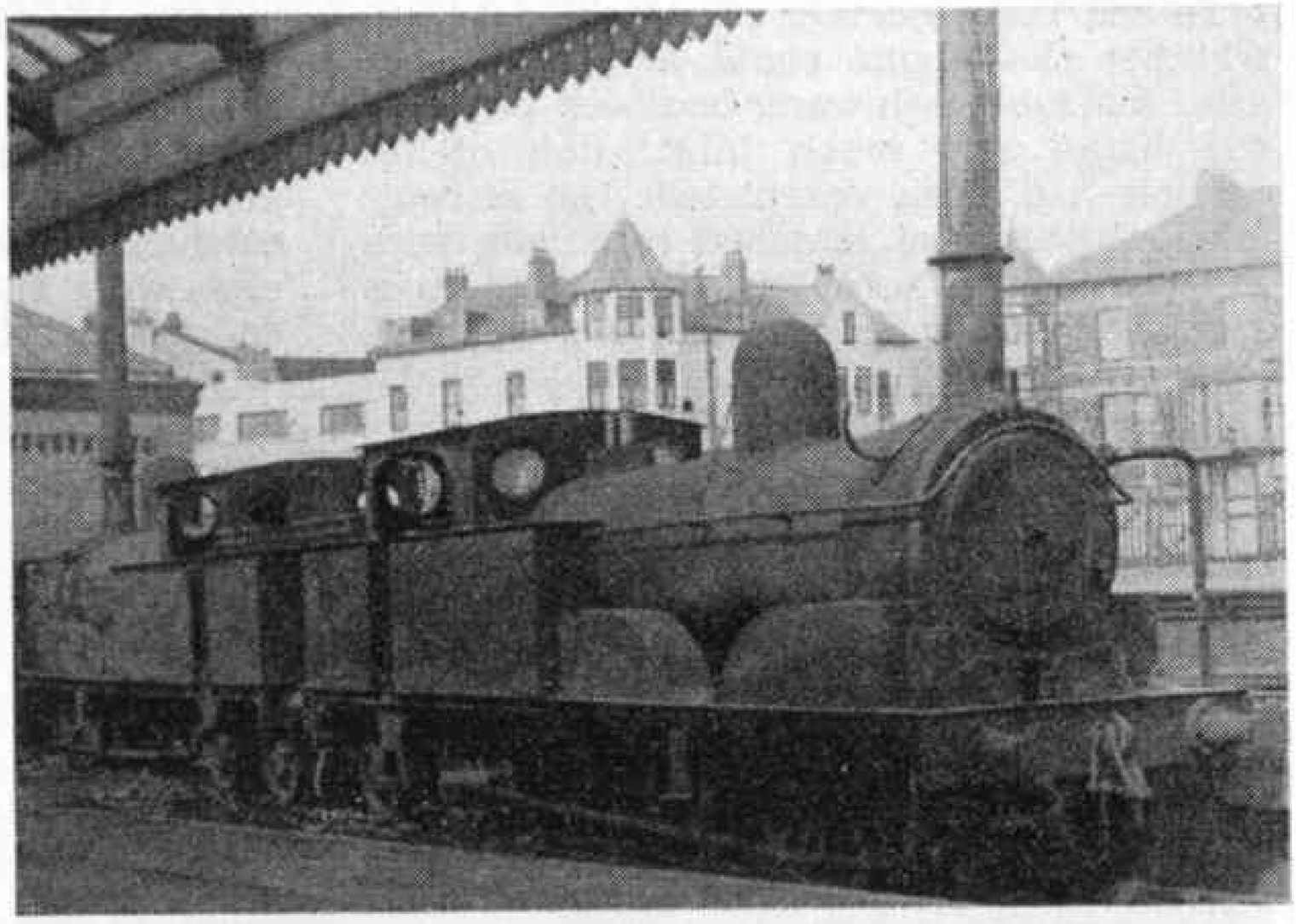
Such boilers may also be found in pumping and water softening stations, where they are invariably beautifully maintained and polished, which adds to the pleasure of examination. The *Railroad Magazine* of America recently listed examples of old or redundant railway engines in that country which had been utilised in various unusual ways. A very striking example was the use of a Lackawanna Railroad freight engine, "in full possession of its faculties", in an emergency supplying both heat and power to a motor car works—what irony!

During the second World War many obsolescent locomotives were pressed into unusual service and thus 'did their bit' in a humble way. Some were fitted with pumps for fire-fighting after air-raids. This role was the last useful job done by some of the famous Stroudley 0–4–2 suburban tanks of the old Brighton line; the pumps, some of which were themselves old stagers formerly used on Merryweather steam fire-engines, were mounted behind the coal bunker. Also on the Southern Railway, as it then was, one came across a few depots where a locomotive, re-inforced by sandbags, was planted over inspection pits between the rails to make an air-raid shelter, although I for one would not have felt too safe crouching below forty or fifty tons of engine! An Aberdare 2–6–0 of the Great Western and a once-famous Class R1 4–4–0 of the North Eastern Railway were actually used as targets for airmen practising their special drill of 'train-busting.' The old Swindon engine must have been tough, for although she was well and truly hit by cannon-shells, the holes were patched up as an additional phase of military training, and she subsequently went into steam again and, with an over-all coat of whitewash, became a target once more.

The R1 had the curious fate of being scrapped at Swindon—what was left of her—and there reminded older hands of the very similar engine the Great Western themselves once built, which was *Earl Cawdor*, an unusual 4–4–0 with domed boiler and North Eastern style of side window cab.

Another elderly engine that met a strange but useful wartime fate was a 4–4–0 tank engine with outside cylinders formerly the property of the Midland and Great Northern Joint Railway. This machine went to the Army's railway depot at Longmoor and was finally used entirely for re-railing practice, until it was so battered and bent as to be scarcely recognisable.

It is also known that a curious fate awaited some of the small but well-known London and North Western 0–6–0 "Coal" engines, which were sent to France during the first World War but proved too feeble for ordinary service and were sent on to the Middle East sphere of operations. There they finished up in couples as stopblocks at the end of sidings in what was practically open desert, providing not only a useful landmark, but (it is said) a handy sleeping-place for wandering Arabs. One wonders what their designer, the famous Francis Webb, would have thought about this form of usefulness thrust upon some of his beloved Crewe engines!



The L. & Y. 0-4-4Ts were withdrawn many years ago, but here are two survivors still in use for carriage warming purposes at Blackpool Central. Photograph by J. N. Westwood.

(Continued on page 692)

Was "Farnborough" Disappointing?

By John W. R. Taylor

MANY people seem to have been disappointed by this year's S.B.A.C. Display at Farnborough. They admit that the flying was as exciting as ever; but there were not enough new aeroplanes to satisfy them. They felt they had seen it all before.

If we regard the Display only as a kind of air circus, they are right. There were few entirely new aircraft and, although the Royal Air Force joined in for the first time with an impressive fly-past of Hunters and Valiants, followed by superb formation aerobatics by a flight of four Hunters from No. 54 Squadron, it provided only a brief interlude in the long parade of familiar types.

Pressure suit, designed by Siebe Gorman & Co. Ltd., to protect the pilot of a high-flying aircraft in the event of failure of his pressure cabin. Photograph by M. F. Allward.

One way of ensuring more variety would be to hold the Display on alternate years, like the *Salon de l'Aeronautique* in Paris. But this loses sight of its main purpose, which is to give British and foreign buyers an opportunity to inspect the products of any particular branch of our aviation industry all in one place, instead of having to visit half a dozen different factories.

If an airline chief comes all the way from Australia or South America to buy new air liners, he does not want to see only the latest Handley Page Herald. He wants a chance to compare it with the Viscount, Heron and other types, even if they are not quite so new. As a result, the Viscount has been seen at Farnborough every year since 1948, and will go on appearing for at least another two or three years.

Nor should we forget that there are other things besides complete aeroplanes to show and sell in this shop window of British aviation. One of our most profitable post-war exports has been this country's leadership in jet-engine development. Rolls-Royce, Bristol, de Havilland and Armstrong Siddeley turbojets and turboprops, or licences to build them, have been sold to almost every important aircraft-manufacturing country. Indeed, many of America's finest and fastest warplanes have Wright J65 engines, which are Armstrong Siddeley Sapphires built in the United States.

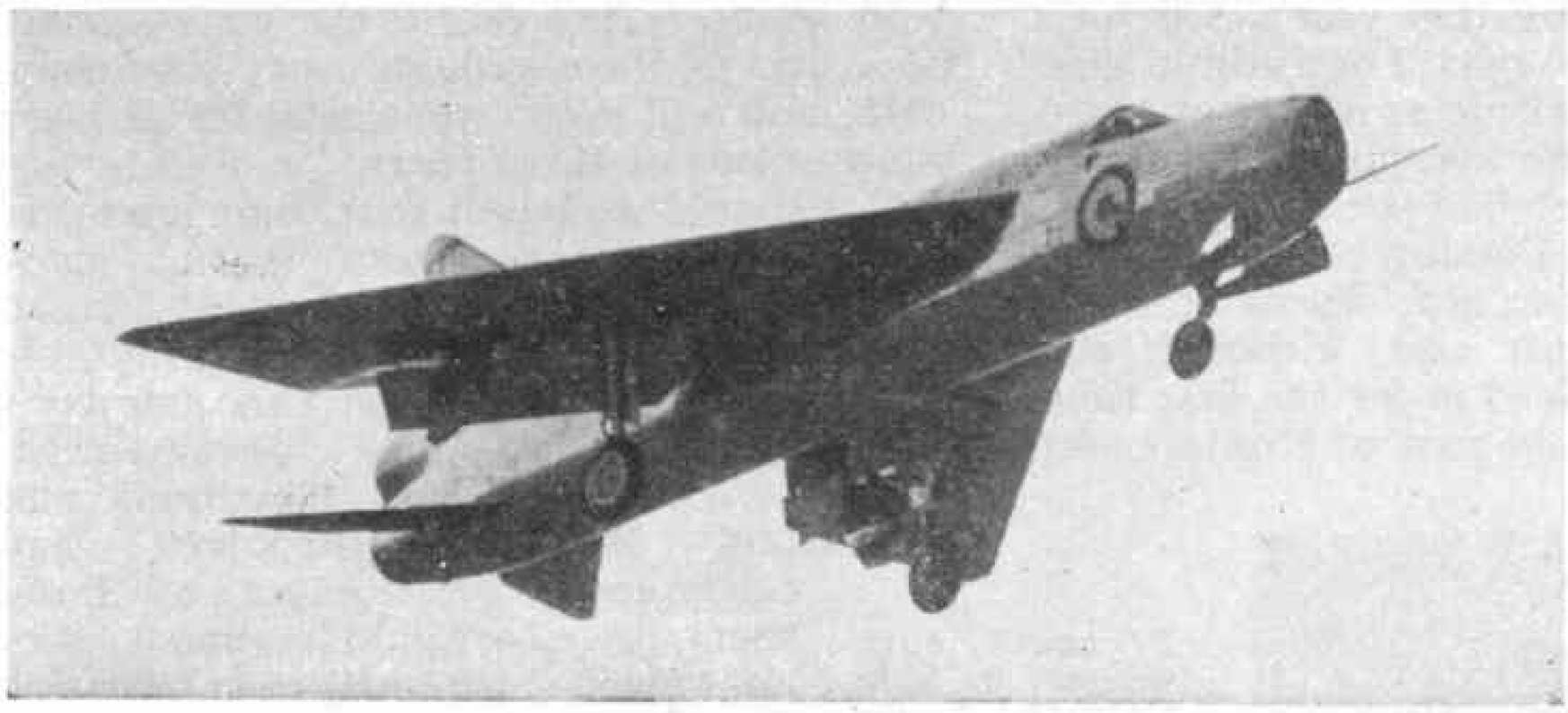
Beautifully-finished examples of the latest engines can always be seen in the huge exhibition tent at Farnborough. This year they included the two most powerful turbojets in the world—the 15,000 lb. thrust de Havilland Gyron and 13,000 lb. thrust Rolls-Royce Conway. But that was only a start, and anybody who took the trouble to walk around the exhibition tent and the outdoor equipment display soon discovered that there were interesting and exciting things to see in the most unexpected places.

Space flight enthusiasts could inspect on the Siebe Gorman Company's stand the nearest thing to a space-suit yet produced in Britain. Designed to protect the pilot of a high-flying aircraft in the event of failure of his pressure-cabin, it was complete with the familiar goldfish-bowl helmet beloved by science fiction writers.

There were other indications that our industry is not lagging in research that will lead one day to space flight. Over Short Brothers' stand was suspended a 25 ft. long rocket of the type used to flight test control, guidance and other systems for guided weapons. Napier displayed their neat little N.R.H. 17 liquid-fuel rocket-motor for missiles, Marston Excelsior a guided weapon control assembly, and Elliott Brothers a radar "homing" head

which will guide a rocket unerringly into its target no matter how much the latter twists and turns to dodge it.

Most important of all, on the Fairey Aviation stand, was a rocket about 9 ft. in length, complete with a big tail



English Electric P.1 jet fighter, the first British combat aircraft to achieve supersonic speed in level flight. A Shell photograph.

"booster". Many experts considered it to be the best indication that the R.A.F. may soon be able to arm its fighters with deadly air-to-air rockets instead of guns.

Although less spectacular, the Mark 4 lightweight ejection seat shown on Martin-Baker's stand was one of the most wonderful and welcome exhibits in the whole show. In the past many pilots have been killed because they jumped from crashing aircraft at such low altitudes that their parachutes had no time to open. By using this seat, a pilot can bale out at any height down to ground level. To prove it, Sq. Ldr. Fifield ejected himself from the back seat of a Meteor Mk. 7 while it was travelling at 140 m.p.h. *on the ground* a few days before the display opened. He made a perfect parachute landing less than five seconds after being shot out of the cockpit, having been released automatically from the seat about 50 ft. above the ground

There were other safety aids too, including a tiny radio set that can be strapped to a pilot's flying suit and which sends out distress signals automatically as soon as it enters the water. It could easily save the life of a pilot who baled out over the sea.

Pye showed their new Instrument Landing System, which will guide aircraft in to a safe landing in bad weather. Smiths showed their S.E.P.2 automatic pilot, which can be linked to an Instrument Landing System in such a way that aircraft can be trusted to land themselves, leaving the pilot free to concentrate on his cockpit drill and to take over just before the wheels touch the runway.

Even a polish can become interesting when, like Wadpol, produced by Valay Industries, it is used to put that extra special V.I.P. sparkle on the Vikings and Heron of the Queen's Flight, President Eisenhower's personal air liner and some of the fastest fighters and bombers of the R.A.F., R.C.A.F. and U.S.A.F.

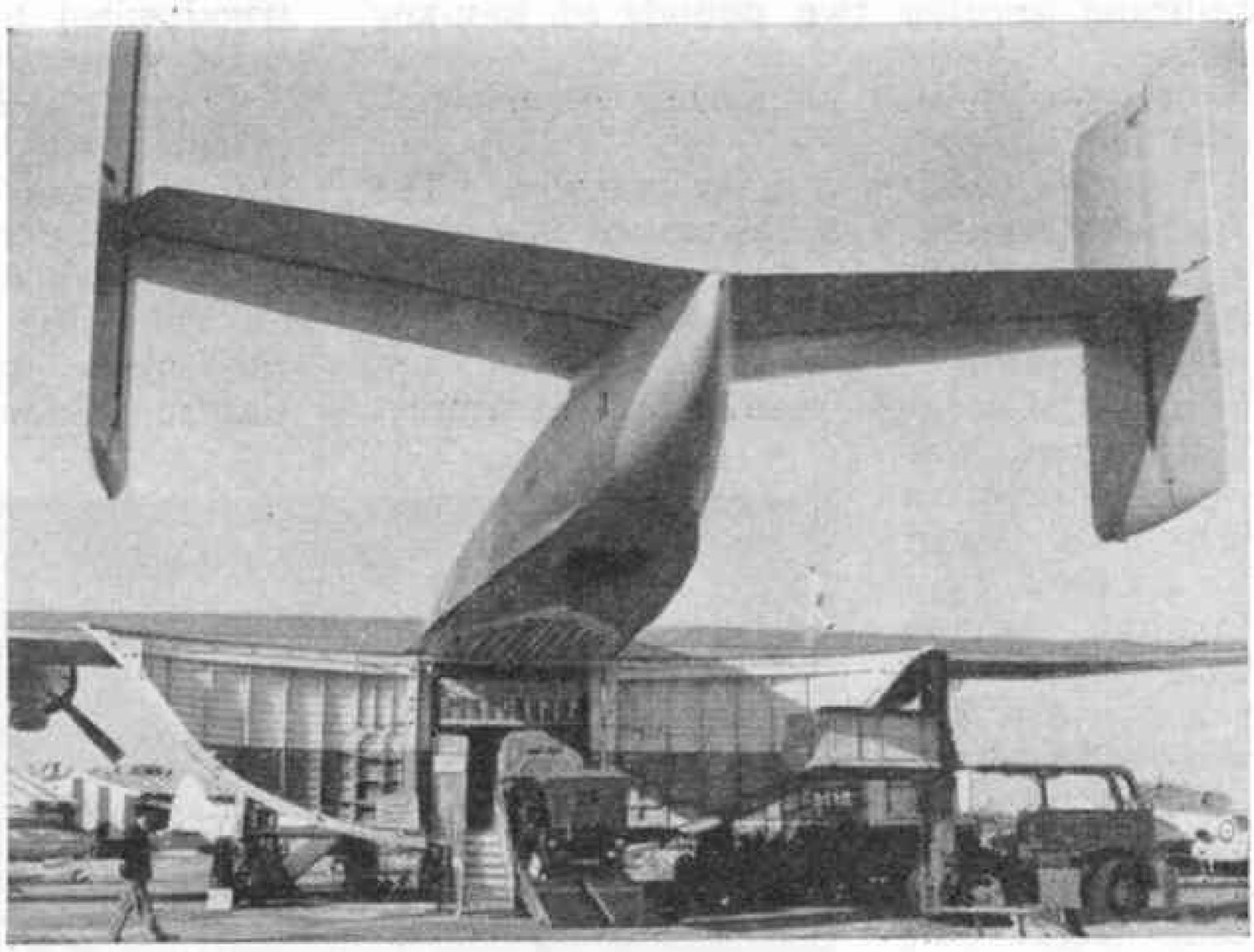
So far, I have described just one or two exhibits from each of a dozen stands in the big tent at Farnborough. There were about 300 stands altogether, with something of interest on every one.

How many of you know, for example, that R.A.F. aircrews who fly in tropical countries can wear air-conditioned "undies" to keep them cool? A set of underclothes,

The Fairey F.D.2 turbojet-powered aircraft, with nose depressed and parachutes, acting as a brake, streaming behind, comes in to land at Farnborough. Photograph by courtesy of "Flight."

known as an air-ventilated suit, was displayed by the G.Q. Parachute Company. Made in one piece, from nylon, it had a large number of built-in plastic tubes, through which refrigerated air could be blown to cool every part of the airman's body.

In time these ventilated suits may become a necessity even in our English climate, because at speeds over 2,000 m.p.h. pilots will encounter the heat barrier. No less formidable than the sound barrier, it is the name given to the high temperature build-up



This striking rear view emphasises the great size of the Blackburn Beverley C.1, the first British aircraft designed for dropping heavy army equipment. The rear loading doors are removed for this role. A Shell photograph.

caused by friction of the airflow over the aircraft's skin as it hurtles through the air. The heat generated is so great that it would melt some ordinary aircraft metals and glass windscreens; and designers are having to turn to new materials like titanium, K-monel and high temperature-resistant glass.

The only aircraft designed so far to probe the heat barrier is the American Bell X-2, described in last month's *M.M.* But, at Farnborough, we were given a first glimpse of two British aeroplanes that are in the 1,000 m.p.h. class. First was the English Electric P.1 fighter, powered by two Sapphire turbojets, staggered one above the other in its massive fuselage.

The other was the needle-nosed Fairey Delta 2, which may prove to be the fastest turbojet-powered aircraft in the world. Intended solely for research, it has an Avon engine and razor-thin wings, which are swept back at 60 degrees. During take-off, landing and taxying, its whole nose droops down from behind the cockpit to improve the pilot's forward view—an idea we may well see copied on other deltas, especially for deck-landing on aircraft carriers.

There is little doubt that the Delta 2 points the way to the single-seat fighters of the future. It has the large control surfaces needed for manœuvrability at supersonic speed at heights above 10 miles; and sufficient power to overtake easily the fastest jet-bombers. Indeed, if its design could be adapted to take a rocket-motor to supplement the jet-engine for take-off and combat, it would seem to offer tremendous possibilities.

That combined jet-and-rocket powered interceptors of this type may not be far away was proved by the appearance at Farnborough of a tanker lorry for high test peroxide rocket fuel. Designed and built by Saunders-Roe, it strengthens American reports that this company is developing a very fast new mixed-power-plant fighter. So there may be plenty of exciting new shapes in the sky over Farnborough next September.

Meanwhile, I hope I have succeeded in convincing you that this year's Display was by no means disappointing to anyone who spent an hour or two in the static exhibition.

Nor was the flying programme so lacking in thrills as some reports would have us believe. Test pilot Roly Falk did an upward roll in the delta-wing Vulcan bomber. No aircraft of this size had ever before been rolled: and not since the old biplane days had most of the 300,000 people who attended the seven-day show seen a "falling-leaf", as performed by Jan Zurakowski in a Canadian Avro CF-100 all-weather fighter.

The Handley-Page Herald, Scottish Aviation Twin Pioneer, Folland Gnat, Avro Shackleton Mk. 3, Westland Widgeon, Fairey Ultra-Light and Jet-Gyrodyne

(*Continued on page 692*)

Box and Cox

A Story of Garden Comedies

By Garth Christian

"IT would be fun if he brought the whole family to breakfast," I murmured, ordering another two pounds of monkey nuts.

"It would also be rather expensive," said my Mother.

Yet we need not have worried. The Bachelor, as we had misnamed the great spotted woodpecker who made a habit of feeding in our garden, was content to make himself responsible for the upbringing of a single member of his family. True there was one occasion when a twin brother of Logman, as we came to call the baby woodpecker, followed his father into the silver birches that shade our drawingroom window; but he soon flew away. More often the Bachelor, on his excursions about the acres of woodland and garden forming his territory, was accompanied by the same solitary offspring. The rest of the brood remained with their mother in other parts of the wood.

This greater spotted woodpecker grew equally fond of cheese and caterpillars, peanuts and spiders as well as brown bread.

This was not the first time we have noticed the peculiar attachment of one parent to a single member of its family. It is not unusual to find a cock blackbird followed about his haunts by a solitary clucking juvenile while the other fledgelings stay with their mother. Yet I rarely remember a couple who seemed to be more detached from the rest of their family than our woodpecker and his baby.

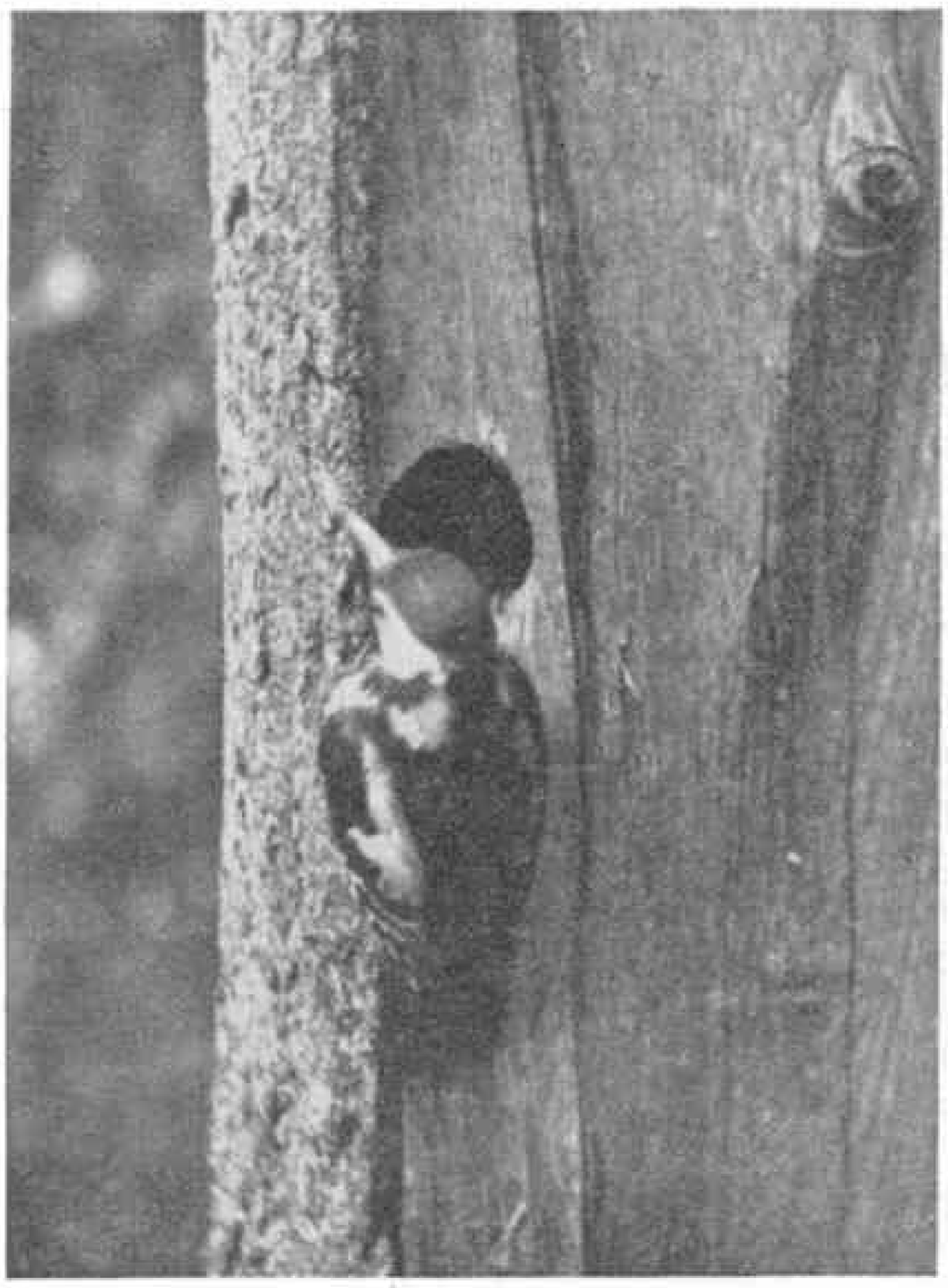
The young birds had been in the nest for at least eighteen days when I learned that Logman had flown for the first time. A kindly neighbour rushed to our door with the news.

"We thought you would like to know," she announced, "that a baby great spotted woodpecker has just perched on our bird table while the father fed it with fat."

Four days later loud squawks from the rotting posts of our garden fence betrayed the presence of Logman, clinging to the upright timber while his father foraged on the lawn for food. A ham bone pushed off the bird table by a blackbird was the main attraction. With his head slanting sideways the Bachelor struggled with immense vigour to separate the fat from the parent bone; with his bill well stocked with the food he would fly to the fence and, perching just above his son, would offer the youngster large helpings.

Perhaps it was the young bird's far-carrying squeaks, more raucous and prolonged than the adult's *Tchaik*, that prompted the nuthatches to bring their three babies to the bird table. A young robin and eight youthful blue tits joined in the feast. I marvelled as on many occasions at the way a noisy company of birds of one species often quickly attracts winged creatures of quite another order.

Next day the woodpeckers came again, clambering up and down the bole of the apple tree and squatting on the top of the well. Once they alighted on the lawn ten feet from a green woodpecker who was digging for ants. The two species ignored each other and the greater spotted kind flew off without eating any ants, though on other occasions they have done so.



"Is that magpie coming my way?—"

The young woodpecker, frequently uttering a loud "Kew-kew-kew" cry as his parent approached with food, clambered about the trees as skilfully as any adult bird. The young nuthatches, on the other hand, were surprisingly clumsy. Perching precariously on the apple tree overhanging the garden pool, they stumbled down the bole with such agitated fluttering of wings that I feared they might fall into the water.

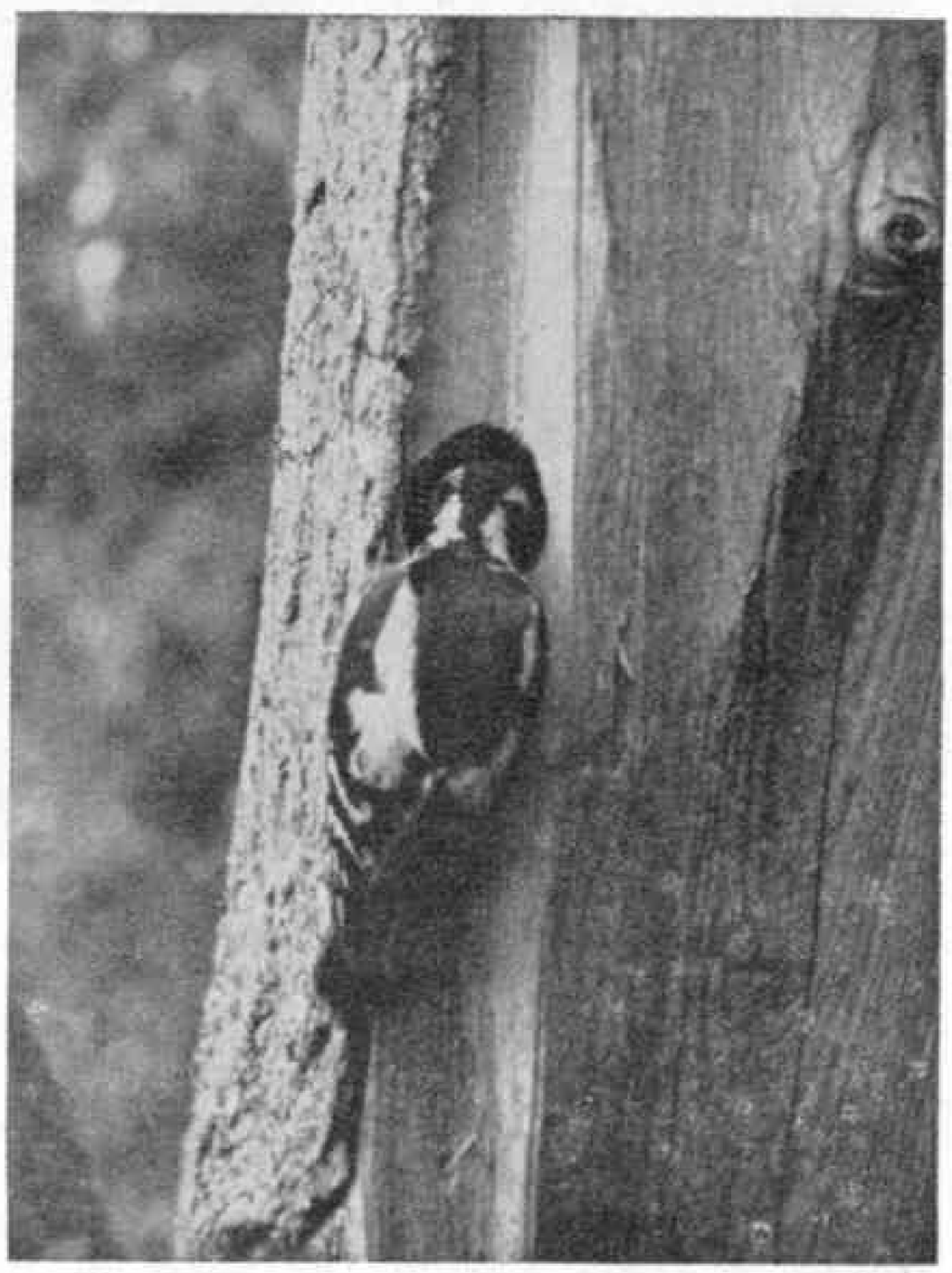
They were no more competent at finding food. Husks of corn left on the bird table for the finches, tiny pebbles in the flower beds, all were seized by the infant nuthatches only to be quickly dropped. Did they mistake them for peanuts? I shall not easily forget the hours I spent teaching a young mistle-thrush to feed herself. Though frequently displaying no little intelligence, she had difficulty at first in distinguishing pieces of string or grass from small worms.

Days after they had become self-supporting, the sight of their parents might prompt the young nuthatches to adopt a begging stance and utter crude baby cries for food. On one occasion a young nuthatch had just placed in his bill a third helping of peanuts when his mother arrived at the bird table. Instantly, a half-nut sticking out of his bill, he turned to her and clamoured to be fed. The parent crouched forward until her bill touched the youngster's peanut. Then she fled into the wood pursued by her squawking offspring, a peanut still firmly clasped in his bill.

Early one morning, as the woodpeckers fed beneath my bedroom window, an adult nuthatch flying from the bird table with a monkey nut was chased by a lively willow warbler. Swiftly the two birds twisted and turned between the silver birches and above the rambler roses, until the flash of yellow behind the larger patch of blue merged into the sombre green of a Scotch pine.

Unlike the woodpeckers, this willow warbler often objects to the presence of our cat—known as the Lodger—when he approaches the bird table. But when a strange cat, strikingly similar in appearance to our own, clambered through the fence and crouched on the lawn, the woodpeckers protested so loudly that I jumped out of bed. There was hardly less uproar the morning two magpies alighted on the bird table, watched with obvious disfavour by the woodpeckers. Yet when a jay flew down to eat half a loaf of brown bread that we had stuck on a pointed post in the garden fence, the Bachelor perched two feet away and patiently waited for him to go.

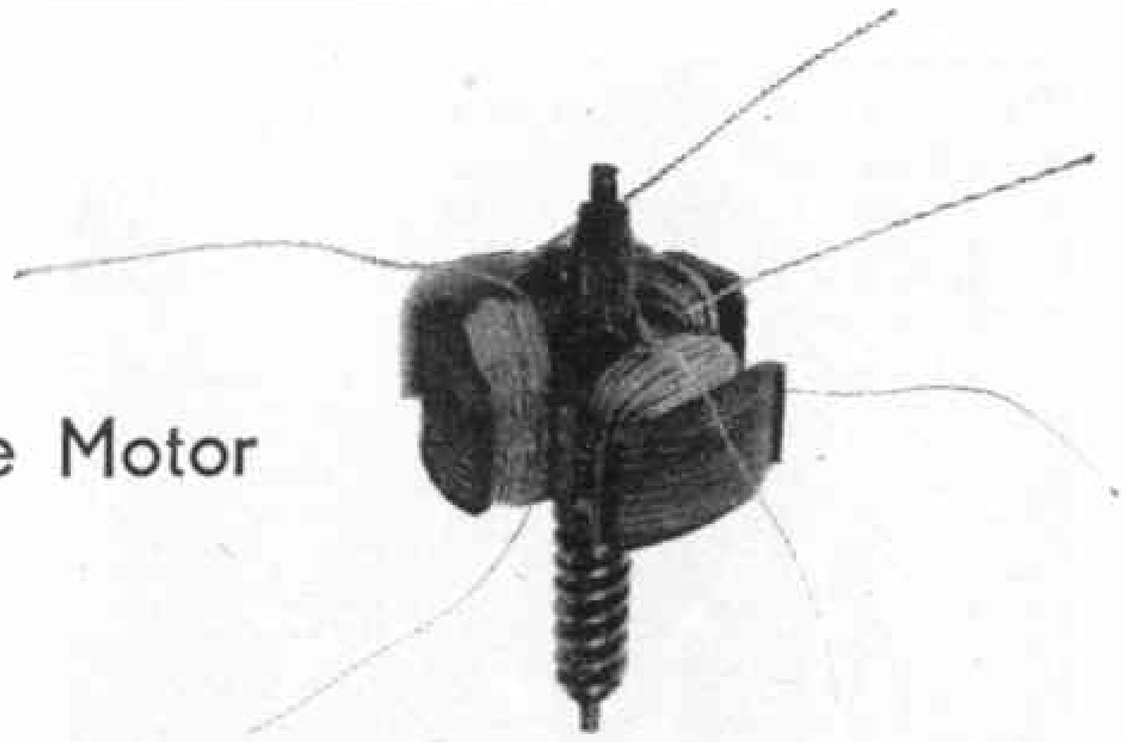
(*Continued on page 660*)



"—No! It's disappeared."

The Heart of the Engine

The Hornby-Dublo Locomotive Motor



HAVE you ever wondered what makes a Hornby-Dublo locomotive run? Some of you may have had occasion to take off the housing of one of your own locomotives, and I am sure all of you have turned this over and peered in between the wheels. So that you will have some idea of the form of the small and powerful electric motor inside, which runs on current picked up from the centre rail of the track by the sprung shoes underneath it.

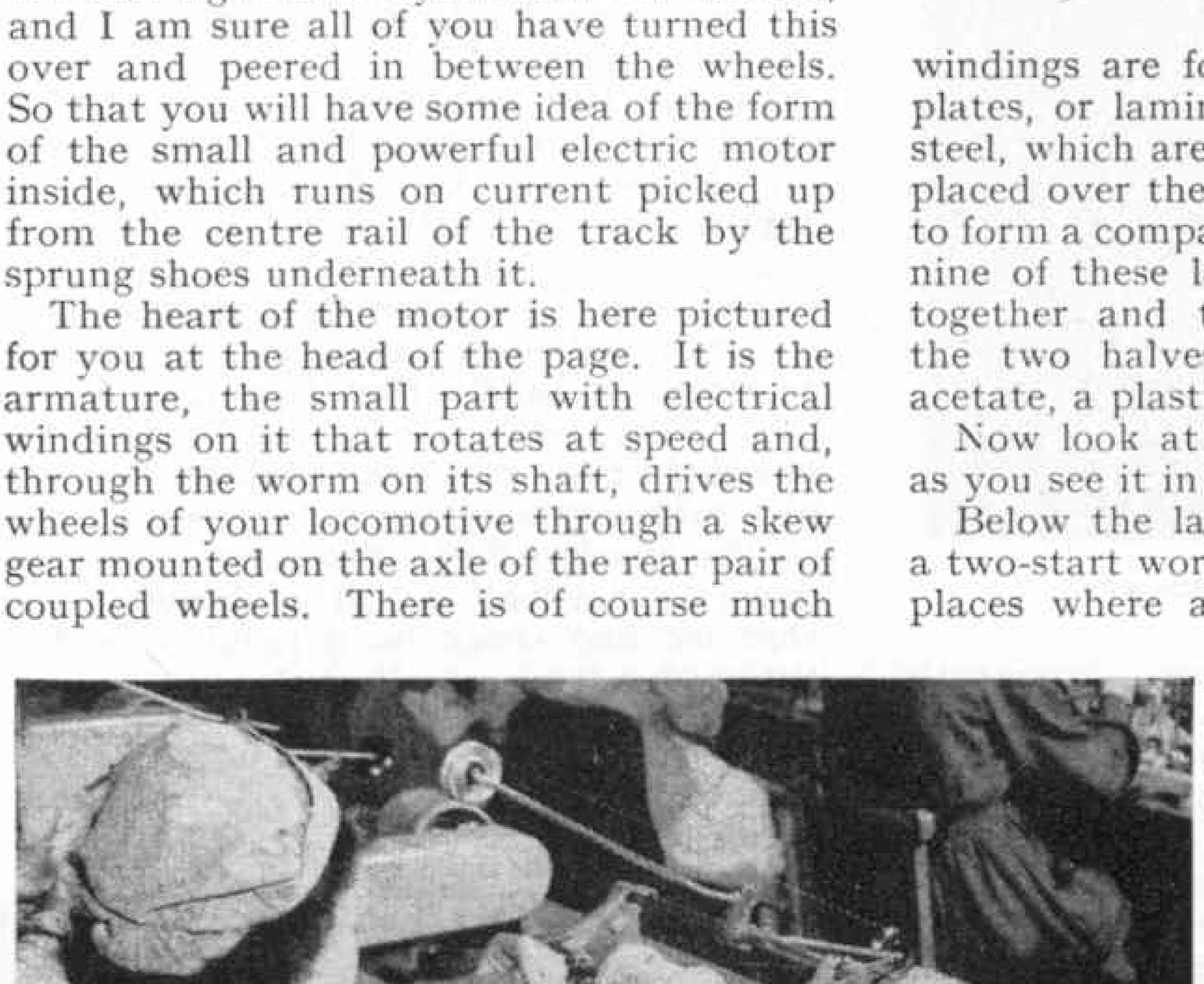
The heart of the motor is here pictured for you at the head of the page. It is the armature, the small part with electrical windings on it that rotates at speed and, through the worm on its shaft, drives the wheels of your locomotive through a skew gear mounted on the axle of the rear pair of coupled wheels. There is of course much more to the motor than the armature, but what else there is we shall see as we run through the process by which the armature itself is completed.

In the illustration of the armature you can easily pick out the windings, of which you will see there are three, set at equal distances apart around the shaft of the motor. The parts around which the windings are formed are built up of thin plates, or laminations, of special electrical steel, which are blanked out in a press and placed over the steel shaft of the armature to form a compact mass. There are actually nine of these laminations, pressed tightly together and they are contained within the two halves of a casing of cellulose acetate, a plastic insulating material.

Now look at the shaft of the armature, as you see it in the little picture.

Below the laminations the shaft carries a two-start worm, that is a worm with two places where a gear wheel can begin to mesh with it. It is this worm that turns the skew gear through which the locomotive wheels are actually driven.

Above the laminations is a splined portion of the shaft. The purpose of this is to retain the commutator, through which current is supplied to the three windings of of the armature.

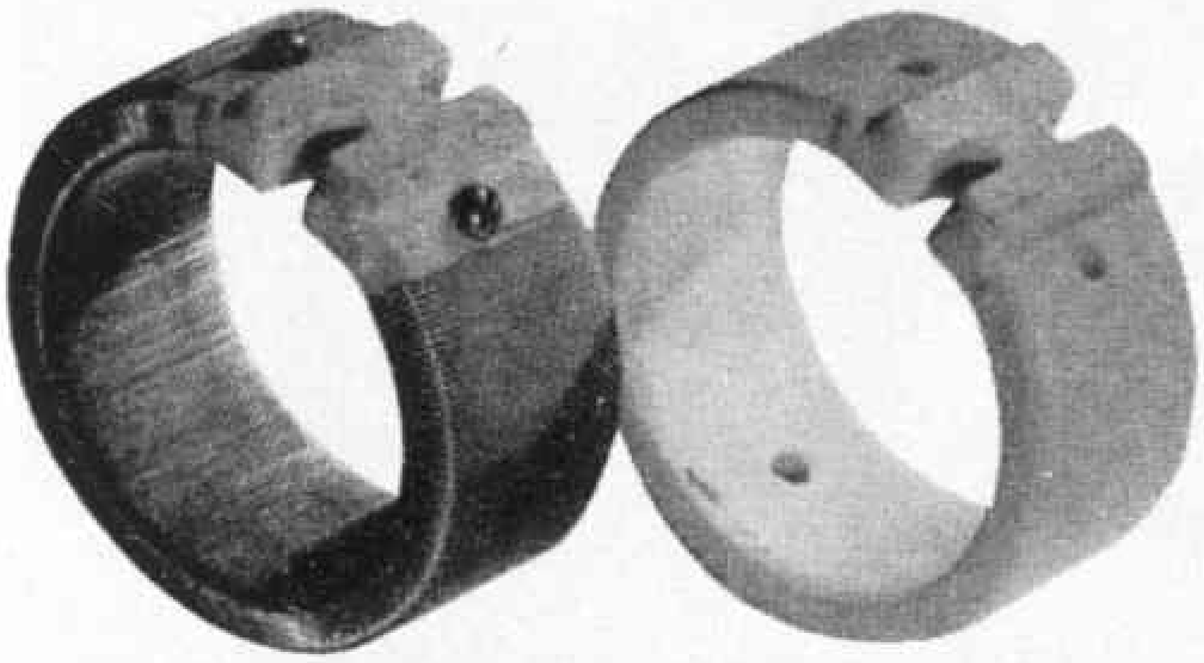


Winding the armature of a Hornby-Dublo locomotive motor.

Now for the all important windings. In the illustration on this page is shown one of the winding machines used. An armature to be wound is held vertically in the machine by means of jaws that close over two of the three projecting arms of the laminations, leaving the third one free. It is on this arm that the winding is to be made. The holder is turned at speed when the machine is in operation, so that wire fed from the bobbin seen on the machine is wrapped round the

laminations in the slots provided for it.

The wire must be laid evenly and compactly. So from the bobbin it is taken over pulleys mounted on spring-loaded arms to keep the tension on the wire constant throughout the operation. A counter on the machine tells the operator when a sufficient number of turns has been wound on, and the machine is then stopped, the wire is cut and the end is temporarily secured. Then the jaws holding the armature in position are opened, and the part is moved round so that the second winding can be laid on, which of course is followed by the third.



A variable resistance for a train controller, with the ceramic former on which it is wound.

The utmost care is taken in making the parts of the electric motor of a Hornby-Dublo locomotive, each of which is thoroughly examined before passing on for assembly. One example of the care taken in this respect is provided by the commutator already mentioned. This causes the current in each of the three armature windings to change its direction of flow twice every revolution of the armature, that is to "commute" the current in the windings. The face of this commutator, on which bear the two copper-carbon "brushes" that carry the current to it, is accurately machined after assembly to the armature to make sure that it is concentric with the armature shaft, so that the rotation will be perfectly smooth, without causing vibration of the brushes.

This very careful attention to ensure perfect "follow" of the brushes as they contact the surface of the spinning commutator is essential in view of the high speed which the latter will attain in service. It may not be generally realised that the speed of the armature when the locomotive is flat out will be in the region of 10,000 r.p.m.

The completed armature is mounted between the poles of a powerful permanent magnet. The actual magnet takes the form of a small rectangular block, which is made from an aluminium-nickel-iron alloy having special properties that make the magnet "anisotropic". This means simply that the magnet is capable of being magnetized fully along one axis only, but when this is done, the resulting magnetic force is many hundreds of times that previously obtained on the old type cobalt magnets.

The assembly of the locomotive motor is carried out with the magnet unmagnetized. When assembly is completed, the locomotive motor is placed between the poles of a very powerful magnetizer, which permanently magnetizes the block in less than a second.

By using this technique, the maximum possible magnetic strength is obtained, but if the magnet system is subsequently disturbed by even partial disassembly, the strength will immediately fall by about 20 per cent. That is why a warning is given against dismantling in the instruction booklet issued with the train set.

The ingenious machine on which the variable resistance is wound.

The final test of a newly-completed Hornby-Dublo 2-6-4 Tank locomotive.

Testing is no less painstaking and exact. The entire motor is fitted in a die-cast frame, to which the driving wheels of the locomotive are fitted, and with the aid of elaborate equipment testers make certain that the windings take the correct amount of current and that the motor is exactly as designed in other respects from an electrical point of view.

There is also a practical test, in which the locomotive unit is run on a special track at this stage of assembly. This is by no means the end of testing. When the body or housing has been fitted over the unit the complete locomotive is again tested by running it on an oval track, first alone and then with a train of coaches, and only when it has proved itself to be up to the standard required is the label attached that indicates it to be a complete and perfect Hornby-Dublo electric locomotive.

As all the electrical requirements of the Hornby-Dublo railway system are actually made in the Works at Binns Road, there is a wide variety of intricate and ingenious winding machines in the Electrical Department. One of these is seen in the lower picture on the previous page; the winding that it is designed for is shown above it. This is a variable resistance for a train controller, wound on a former of ceramic material, which is pictured separately.

The wire used for this variable resistance is constantan, a nickel copper alloy that is specially suitable. It is bare, and the successive windings, although very close together, do not touch each other. They must not, in fact, for if they did the resultant resistance value would be lowered, and the unit would be rejected.

Looking at the illustration on the previous page of the machine used for this winding, the ceramic former can readily be seen, held in position by a special fixture. This fixture rotates slowly while winding is in operation, the effect of this being that the former turns on its centre, so that each turn of wire is spaced away from the previous turn by the desired amount.

Wire for the winding comes from the spool at the top of the picture, and it is first wound on the vertical metal ring that passes through the former. This ring is known as the shuttle ring.

(Continued on page 692)

Testing a Hornby-Dublo Diamond Crossing.

A Branch Line Closes

By J. L. Hepworth

ONE of the last stopping trains to Keighley on closure day for the E.R. Bradford-Keighley-Halifax line steamed into Thornton station. Stationmaster Mr. B. G. Whitaker hurried out of his office with a headboard he'd made himself and the train became aptly named *The Economist.* There were a few other trains before the closure of the line, but none of them stopped at Thornton and Mr. Whitaker wanted to share in the farewell ceremonies.

Despite appeals, the line was closed to passenger traffic on 21st May last the Transport Commission stating that it had been running at a loss for many years. Though too few people appeared to have been buying tickets for normal travelling, Mr. Whitaker had scores of applications for tickets as souvenirs when the closure of the line was announced. They came by post from all over the country and of course Mr. Whitaker sent all the souvenir tickets asked and paid for!

Naming a train, with the "headboard" in an unusual place! The train was the last to stop at Thornton, on the E.R. Bradford-Halifax line, before this was closed for passenger traffic.

A train headed by one of the last 0-6-2T engines on passenger service on the line emerging from Queensbury Tunnel.

The construction of this local line began in 1866 and proved a very costly job. Cuttings in some sections had to be blasted through solid rock, and at Halifax a stone main road bridge was demolished and replaced by the present iron bridge.

The main junction was at Queensbury station, the platforms of which were arranged in triangular formation. Often three trains arrived there together, allowing passengers to change for either Bradford, Halifax or Keighley. At Queensbury is one of the deepest tunnels in England, 430 feet felow the surface at its deepest point. It is 1½ miles long and so straight that it is possible to see right through it. Queensbury itself stands on top of the hill the tunnel cuts through, part of it about 1,000 feet above sea level.

Apart from its unusual platform arrangement Queensbury station has a sheer drop of over 50 feet behind one platform. When seen from this side it has rather a Swiss appearance, fostered perhaps by the massive timber supports on the steep hillside. As a change from tunnels, the Keighley line beyond Queensbury provided passengers with some wonderful open views from Thornton Viaduct.

Railway Notes

By R. A. H. Weight

Aboard the Bristolian

Since its acceleration last year, the W.R. *Bristolian* express scheduled to provide a 1¾-hr. service between London and Bristol each ordinary weekday has been the fastest train in Britain, averaging over 67 m.p.h. from start to stop. Castle class 4-cylinder 4–6–0 locomotives stationed at Old Oak Common, near Paddington, took over the normal haulage of this flyer from the larger Kings last summer. It is a smart 7-coach buffet car train weighing about 250 tons including passengers, of whom there were many when I travelled recently on the up or London-bound journey routed via Badminton. This involves more hill climbing than the slightly longer Bath route traversed in the opposite direction. Between London and Wootton Bassett, 83 miles, the course is the same for both.

We were away exactly at 4.30 p.m. behind No. 7001, *Sir James Milne*, ably handled by Bristol driver Rowsell and fireman Payne. We climbed northward at first up the steep 1 in 75 rise amid a network of tracks to Filton Junction. There we turned east on to the S. Wales main line and were soon running at more than a mile a minute though mostly on a rising gradient of 1 in 300.

Having entered the long Sodbury tunnel at 66 m.p.h. and passed punctually through Badminton (summit) at 63, in 21½ min. from the start, 17½ miles away, we now had 100 miles to go over a beautifully aligned and largely level road with only 83½ min. allowed. Actually the next 55 miles were reeled off in 43 min. at an average of 76¾ m.p.h., including observance of two slight speed restrictions, with a maximum of 84 and fully 20 miles at round about 78–82 m.p.h.

Track renewal and refettling must go on to keep up a high standard of maintenance and we had to crawl, almost, over a stretch in hand before Reading, and we suffered a severe engineering slowing about two miles out from Paddington. In between, 72–78 m.p.h. was sustained past Slough, Southall and Ealing into the London suburbs. Our arrival was two min. late. We had covered 117½ miles in 107 min., an overall average of 65 m.p.h., but as extra delays had cost over 5 min. it was equal to an unchecked run in less than 102 min. at an overall mean speed of 69 m.p.h., which was a creditable feat.

Other W.R. Express Running

Among the big London termini, Paddington station decidedly handles most daily express or long-distance main line steam trains. There are six principal routes or areas provided for: West of England via Newbury and Castle Cary; Bath and Bristol; S. Wales via Severn Tunnel; Birmingham and the north via Bicester; Oxford-Worcester; Gloucester-Cheltenham; and many other inter-connecting and shorter distance services. There are periods in the day when important departures take place at frequent intervals; there are busy spells both inward and outward at lunch time, round about 6–7 p.m., and so on.

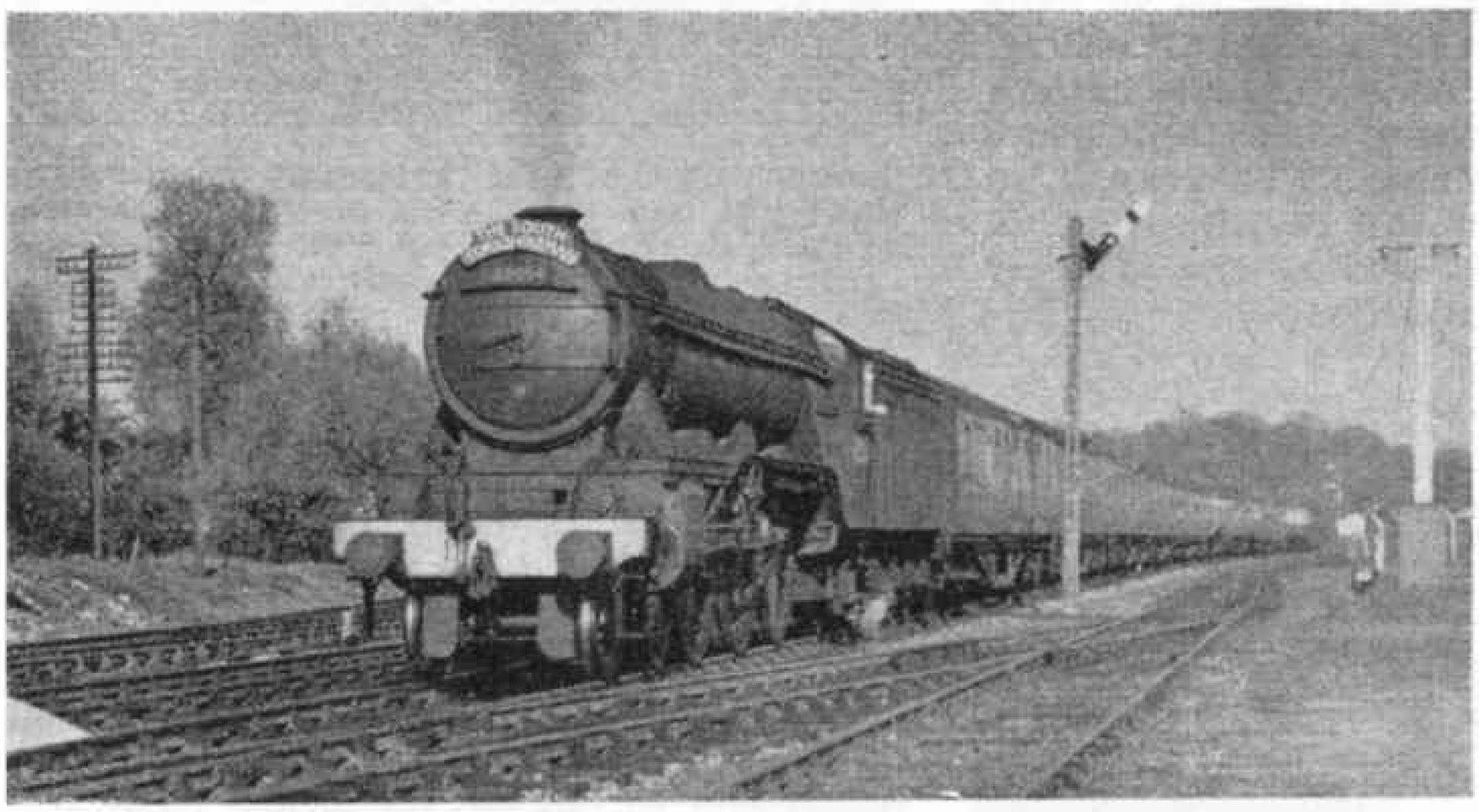
The Western Region also rather specialises in long-distance through passenger services of cross-country character, which serve many principal stations and junctions on the way. Several run to and from other Regions connecting, for example, the North and Midlands with Devon and Cornwall. Rolling stock in some cases is provided jointly on alternate days.

There are through trains to and from the S.R. as well as W.R. South Wales-West of England services. Bristol (Temple Meads) station is a focal point on the route of many of these through trains. Since its rebuilding it has spacious platforms and more tracks, avoiding or connecting lines. As a terminus of the former Midland Railway's Derby-Birmingham-Gloucester main route it also handles L.M.R. trains.

I travelled between Bristol and Taunton by the Swansea-Penzance service behind 2-cylinder 4–6–0, *Burmington Grange* working through from Cardiff to Newton Abbot. These Granges are the same type locomotives as the Halls except that they have smaller driving wheels 5 ft. 8 in. in diameter. Like a number of the cross-country ones dealt with at Bristol, this express had come by way of Severn Tunnel, Britain's longest bore, and conveyed a cafeteria car for Plymouth as well as a through portion for the Torquay line.

Returning, I rode the northbound *Cornishman*, a handsome 11-coach formation, well filled, weighing over 400 tons including passengers and with a horse box on rear. Its route is from Penzance and Plymouth to Birmingham and Wolverhampton, W.R. It attaches a Torquay portion at Exeter and proceeds from Bristol to Gloucester over the L.M.R., thence via Stratford-upon-Avon. *Kidwelly Castle* took us along at 60 m.p.h. across the Somerset levels and gave place at Bristol to *Usk Castle*.

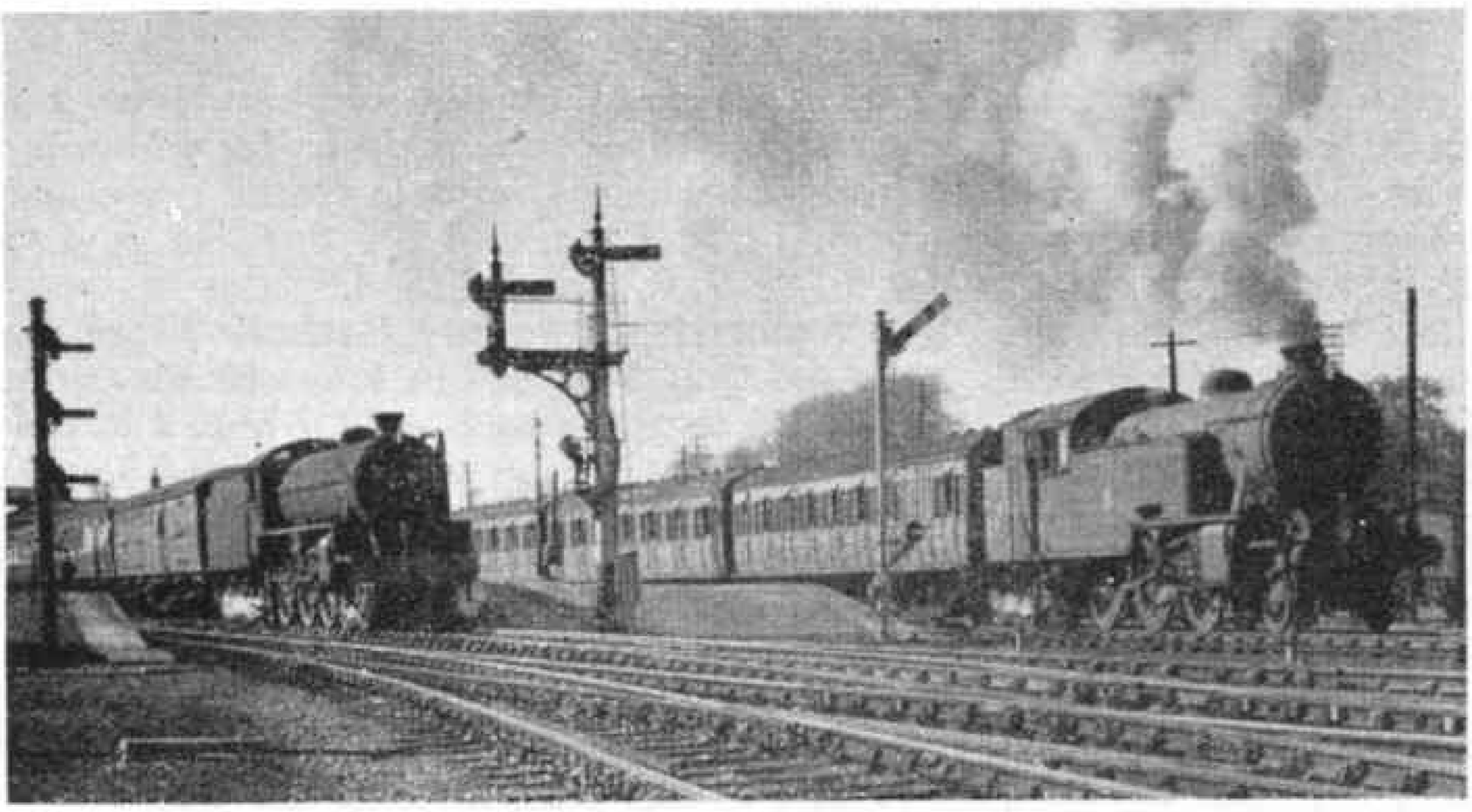
The *Devonian*, another North-South restaurant car express, from Bradford and Leeds to Torquay and Paignton by way of Sheffield and Derby, was brought into Temple Meads by L.M.R. Jubilee 3-cylinder 4–6–0 *Bellerophon*, and taken forward by W.R. *Nanhoran Hall*. I also saw a Liverpool-Plymouth express with through Manchester-Kingswear portion, that travels by way of Crewe, Shrewsbury, Hereford



The South Yorkshireman headed by A3 Pacific No. 60054 Prince of Wales near Aylesbury. This and the upper photograph on the next page are by D. Ives.

Bristol, Exeter. All were running fairly nearly to time.

The pioneer big 4-cylinder 4–6–0, *King George V*, complete with bell in front presented by the Baltimore and Ohio Railroad to commemorate the successful visit of this engine when new to the U.S.A. in 1927, took me from Paddington in the *Merchant Venturer* express. This has a 106-min. schedule for the first 107 miles to Bath. Margins between trains can be close on this busy line and signal delays made us a little late, but the last 29½ miles from passing Swindon to stopping in Bath were covered in 27 min., with two maxima of 75 m.p.h.



A nice variety of signals greets the trains at Aylesbury. E.R. 2-6-4T No. 67783 is leaving with a train of ex-Metropolitan stock for Baker Street, while B1 4-6-0 No. 61116 waits with a train of empty stock.

New Engines Placed in Service

Continuing the construction of 15 class 4 4–6–0s at Swindon, Nos. 75068–70 have been completed for the Southern Region, the last-named being allocated to Exmouth Junction, Exeter. Some are at Dover shed as previously announced. The 10 larger 4–6–0s of class 5, Nos. 73080–9, also for S.R. use from Stewarts Lane, London, depot, were ready by the end of September. The 25 of the same type being built at Doncaster, Nos. 73100 upwards, are the first 4–6–0s put in hand at that Works as none of the L.N.E.R. 4–6–0s was constructed there.

New Crewe Class 9 2–10–0s with normal boilers, Nos. 92050–5, for the Midland Division are being followed by more in that series. No. 92050 went temporarily to Rugby Locomotive Testing Station.

There are considerable additions to stocks of 350 h.p. diesel-electric shunters, as intended for some time to come, including Nos. 13121–4, 13167–8, stationed on the Midland Division, L.M.R., with Nos. 13169–72 on the Western Division thereof; 13159–63 have gone to the E.R., which has also received smaller diesel-mechanical 0–6–0s Nos. 11124–8.

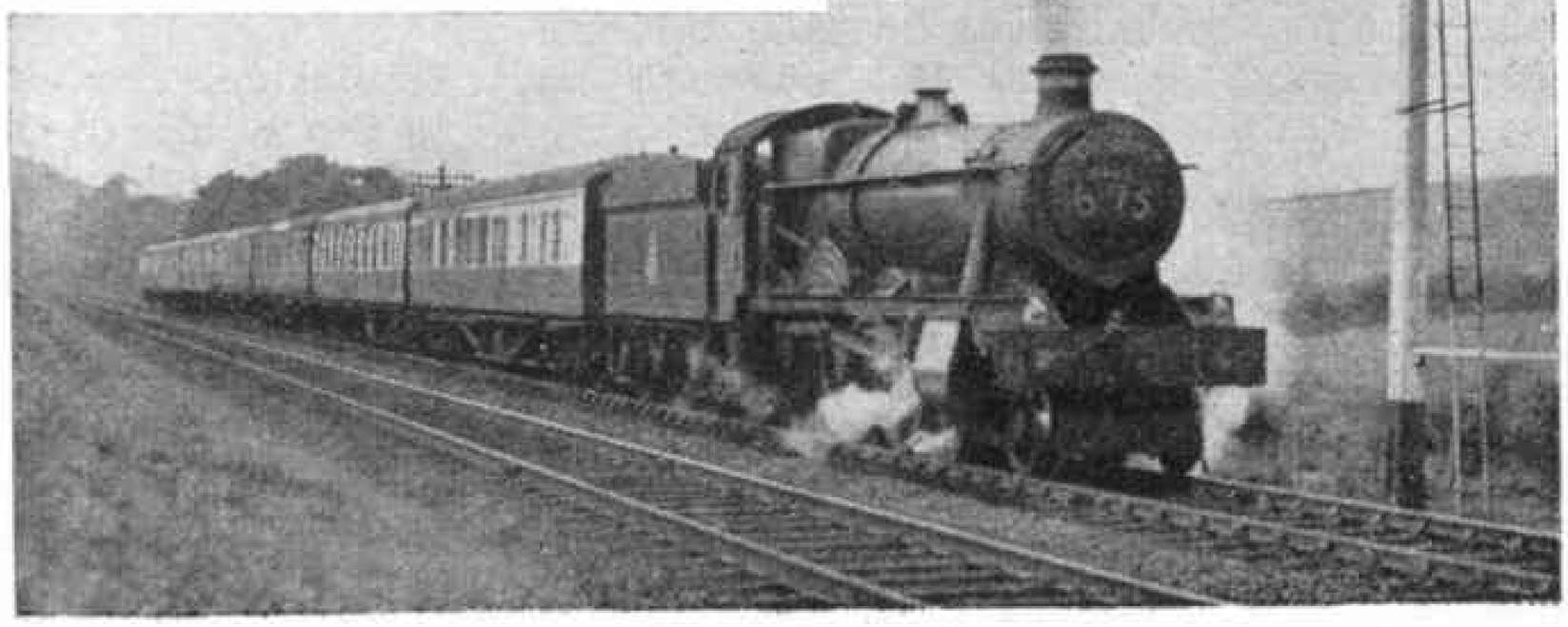
Southward by the "Great Central" Route

The former Great Central, afterwards L.N.E.R., line between the Midlands and London (Marylebone) is now operated by the Eastern Region. Its two principal expresses, largely used by business men, connecting Sheffield, Nottingham, Leicester, Rugby and Marylebone each weekday in both directions are named respectively *The Master Cutler* and *The South Yorkshireman*. Part of the latter also serves Huddersfield, Halifax and Bradford. I joined it at Sheffield, where I saw L.M.R. "Black Five" 4–6–0 No. 45435 bring in the Bradford portion. The train was made up to 11 smart vehicles, making a 400-ton load behind the tender of V2 2–6–2, No. 60863. To the first stop at Nottingham, where this E.R. route bridges over Nottingham Midland Station, we gained on a timing that makes allowance for steep gradients and service slowings, for this is an area of collieries, branch and industrial railways, many freight trains and engines.

From Leicester to Marylebone the locomotive was A3 4–6–2, *Flying Fox* then just transferred from G.N. to G.C. Section. With two slacks due to repair work almost 5 min. were gained from Rugby, where the restart was late, to the Aylesbury stop, with sustained fast running between Helmdon and Calvert. By a long viaduct close to Rugby the G.C. line crosses the numerous Euston main and branch lines and affords a good view of the L.M.R. station and its activities, as well as of the Locomotive Testing Building.

At Aylesbury station, depicted in one of our illustrations, W.R. branch trains are seen and the outer London Transport area is entered. E.R. L1 and L.M.R. class 4 2–6–4Ts take a considerable share in working the Marylebone and Baker Street suburban trains from there, the latter being hauled by electric (Metropolitan) locomotives south of Rickmansworth. Here we observed the usual severe slowing through the station, after some good hill climbing and fast running among the beechwoods of the Chiltern Hills. Then we ran past London Transport tracks and trains, through Harrow, Wembley Park, and so into Marylebone, London's quietest main line terminus.

W.R. No. 6965 Thirlestaine Hall climbs the 1 in 42 Hemerdon incline with the up Cornishman. Photograph by M. W. Earley.



How to Make Magic Squares

Fun with Figures

By J. D. Illingworth

MOST ancient peoples were superstitious about numbers. They believed that certain of them were especially important. Thus the Greeks thought there were four elements, earth, air, fire and water, and that there were also four elements in the make up of man's character, blood, black bile, phlegm and yellow bile, which were supposed to come from the liver, the spleen, the lungs and the gall bladder respectively. So four was a mystical number.

Seven was another, and a very important one, and there were also 12 and 40, which are frequently met with in the Old Testament along with it. In Babylon, seven was *the* outstanding mystic number, probably because of its association with the numbers of planets then known, of the phases of the Moon and of the days in the week.

We no longer believe in that sort of magic in numbers, but we do describe squares made up of numbers as magic, when the numbers in each row, column and diagonal add up to the same total.

Magic squares have long been playthings. The Chinese constructed magic squares before the birth of Christ, and Moschopulus, an inhabitant of Constantinople, introduced them into Europe during the fifteenth century.

It is possible to construct such squares at sight. Let us begin with the simplest form, using the numbers 1 to 9. This is what is called an odd number square, for there are three numbers along each side, and three is odd. Squares with four, six, eight and so on numbers on each side are even number squares, and have to be formed differently.

8	1	6
3	5	7
4	9	2

Fig. 2

In a square containing nine numbers, the one in the centre appears four times—in two diagonals, in one row and in one column. Each corner number appears three times—in one column, one row and one diagonal; and each of the other numbers appears only twice.

4	9	2
3	5	7
8	1	6

Fig. 1

Let us combine the numbers 1 to 9 in groups of three to add up to 15, which is a third of their complete total. We get: 9, 5, 1; 9, 4, 2; 8, 5, 2; 8, 6, 1; 8, 4, 3; 7, 5, 3; 7, 6, 2 and 6, 5, 4.

We need not go any farther. From this we see that 5 occurs in four combinations, 6 and 8 in three each, and 7 and 9 in only two. So 5 will go in the centre, and 9 and 7 must go in the middle squares of one of the side columns or rows, but not in the same column or row. Then 6 and 8 must go in corners. The rest is easy, and so we get the magic square in Fig. 1.

To see how to make an odd number square of any size, arrange the numbers as in Fig. 2, which is Fig. 1 inverted. Here, starting at the middle top space with 1 go upward diagonally to the right to put down the next figure 2. But this goes outside the square, so it is placed in the lower right hand corner, as if the bottom row had been repeated above the top one. A second rule is that on passing beyond the right hand column, the next number goes similarly in the left hand column. So 3 goes in the middle of the first column, that is in the left hand column as if that column had been repeated at the right. When the space for the next number is already occupied, as with 4, it is placed immediately beneath the previous one, in this case 3.

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

Fig. 3

Following these rules will enable you to build up the whole magic square, and to make an odd number square of any size you like.

Try this with the numbers from 1 to 25, and you will get the magic square in Fig. 3, with five figures in each row or column. Here you will find that after the figure 15, the next one goes outside the square at the top right hand corner, and there is no square on the left for it to occupy. It is therefore placed under 15. This is another rule to remember in building up odd magic squares, but really it is an extension of one of those already given.

Now what about magic squares with an even number of figures on side? Here there is no middle place to start from, so we have to find a new rule. So let us look at a four square figure, not a magic one, set out with the numbers 1 to 16 in order. You will see it in Fig. 4. Our totals are right in the diagonals, but wrong everywhere else.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Fig. 4

But notice that there is a regular difference between the rows, and between the columns. We must add 24 to the top row total and subtract it from that of the bottom row to make them equal, and add 8 to the second row total and subtract it from that of the third row to give the same effect. In the columns we must increase the first total by six, and the second by 2, and decrease the third and fourth by 2 and 6 respectively.

If we move our top corner numbers to the bottom row, and our bottom corner ones to the top row, we shall put two rows right. If we exchange the 6 and 7 from row two with the 10 and 11 from row three, we shall put those rows right, as you can see in Fig. 5. Notice that our diagonals are still correct. They have simply been moved round by the alterations.

13	2	3	16
5	10	11	8
9	6	7	12
1	14	15	4

Fig. 5

Now to tackle the columns. Let us repeat our previous trick and exchange the corner ones. Then a similar movement with the second and third columns to that we made in the second and third rows will alter our totals as required.

Fig. 6 shows the end of all this, and on adding up the row, columns and diagonals we find we have solved our problem for a magic square with four numbers on each side.

Now what about larger even number magic squares? Look at Fig. 7, where diagonals have been drawn and those numbers in Fig. 4 left in where they are not on diagonals. Now just exchange each remaining number in Fig. 4 with that opposite to it on the diagonal. Thus exchange 1 with 16, 6 with 11, 4 with 13 and 7 with 10. The result is Fig. 6, the magic square we have just found.

16	2	3	13
5	11	10	8
9	7	6	12
4	14	15	1

Fig. 6

This gives a rule for even magic squares that have on each side any number of figures that is divisible by 4, that is squares with eight, twelve, sixteen, etc., figures on each side. But in working it out for any example draw the diagonals for each set of 16 figures; there will be four such sets in an 8-side square, and nine for a 12-side square.

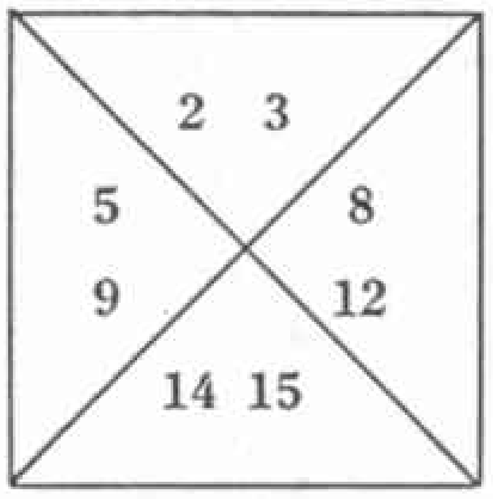
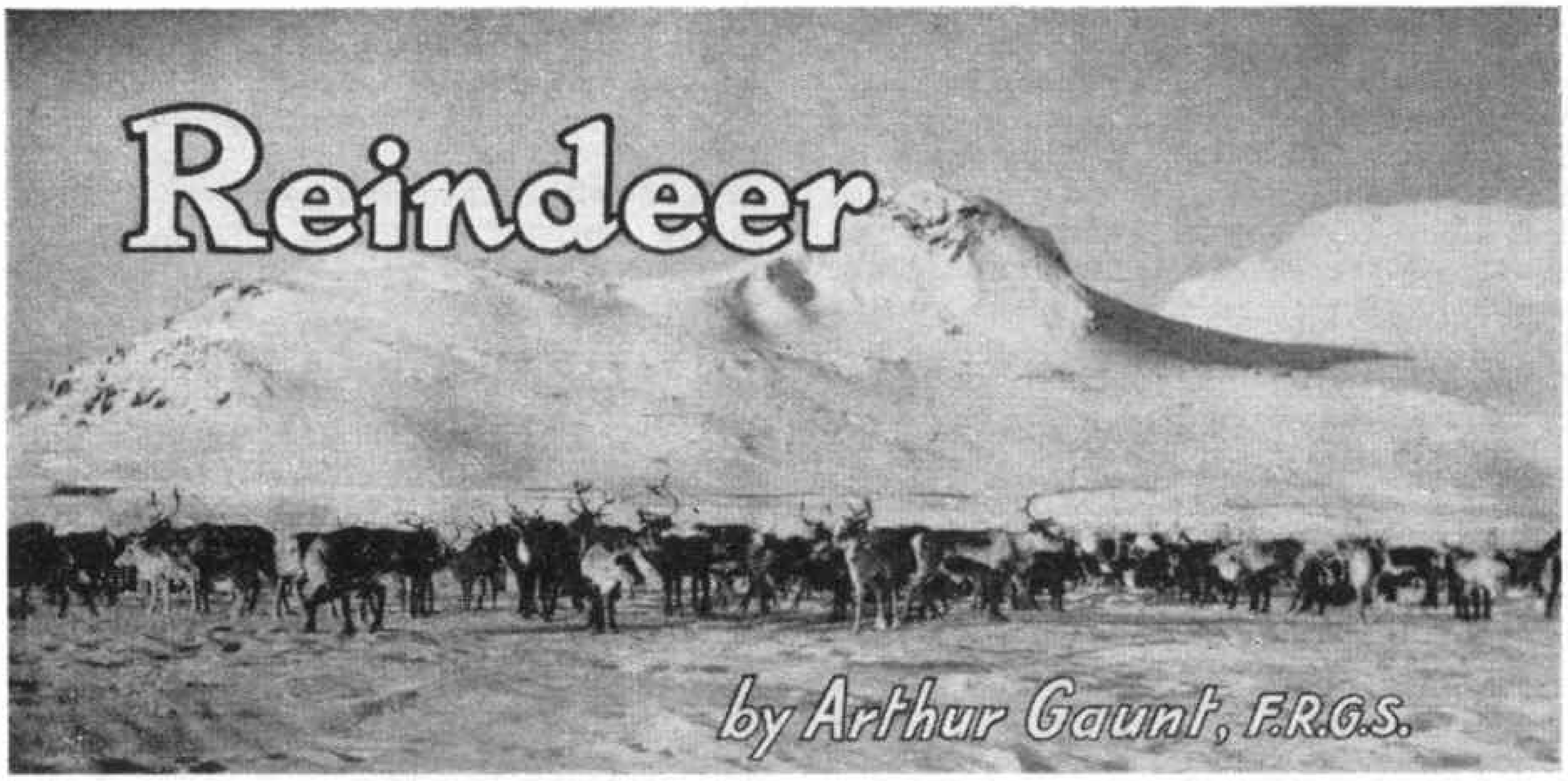


Fig. 7

Try making up these larger magic squares, and even bigger ones if you have time, both odd and even.

There are many simple games in which a player who thinks about numbers can beat an opponent who doesn't. For example, there is the game of Nim. In this a player deals out counters in heaps, putting out as many heaps as he wishes, each with any number of counters. Each player in turn then removes as many counters as he likes, taking them from one pile only, and the winner is the one who takes the last counter.

Here a player must strive to ensure that his opponent cannot reduce the number of piles to two of one counter each. If there are only two piles, he must always leave the same number in each. Thus, if the piles contain 7 and 5 counters respectively, he must take two from the first. If there are three piles, then as soon as any two piles are equal he must remove all the counters from the third pile.



TRADITION has given the reindeer special Christmas significance, for we have been led to believe that without the help of this animal to draw his sleigh, Santa Claus would be quite unable to journey from his snowy kingdom to distribute gifts on Christmas Eve. Legend apart, the reindeer is coming more into the news, for during the last few years efforts have been made to reintroduce it into the Scottish Highlands.

Reintroduce is the right word, since the animal is really no stranger to Scotland. Such creatures roamed wild there 800 years ago, but they vanished as the forests disappeared. Now, however, they are to be seen once more in the glens of the Cairngorms, and although the number roaming there is yet only small, it is hoped ultimately to establish considerable herds in the region. Behind the scheme is the knowledge that the reindeer has many actual and potential uses in temperate and sub-arctic regions, though the general public does not always realise this.

Reindeer hide can be used in making leather goods, and reindeer meat is said to be "juicier" than venison. Other countries, such as Russia and Sweden, have long been aware of the importance of this animal, and have accordingly taken steps to make the fullest possible use of it.

The plans to bring reindeer back into Scotland began in earnest in 1949, when a Reindeer Council of the United Kingdom was formed to promote the idea. It has the support of Arctic experts and those interested in improving the Highlands.

In addition to reporting that the Cairngorms are suitable for reindeer herds, they state that large areas of Sutherlandshire would support such animals, and that other herds might be introduced into some of the Western Islands. The reindeer would not interfere with sheep rearing or cattle breeding. Moreover, reindeer need far less attention than either sheep or cattle.

They are so hardy that they can live in the open throughout the year, even blizzards being no hardship to them. The only time when they need attention is when calving in spring, and they need no feeding at any season.

A reindeer herd in snowy country is seen in the illustration at the head of the page. Their herds are very important to the Lapps, for they provide meat, milk, hides for bedding and tent-covering and many other products, and herds are now being built up in Scotland and in other countries. Illustration by courtesy of the Norway Travel Association.

Their main food throughout the year is supplied by various kinds of lichens, especially what is called reindeer moss—which is not really moss at all, but a variety of lichen. One of the reasons for the choice of the Scottish Highlands for experimental herds is that such lichens grow there.

Scandinavian countries, already possessing big herds, have been interested in the scheme, and six years ago 25 first-class reindeer were shipped to Britain, arrangements also being made for the animals to be under the care of trained herders.

The nucleus of the herd was installed in a fenced off section of Rothiemurchus Forest in May 1952, and has since been augmented by others from Sweden. An

initial difficulty was the smallness of the enclosure, since the regulations required it to be surrounded by a 6 ft. fence. Eighteen months later the Forestry Commission offered 4,000 acres of more suitable, elevated, unplanted land and the fencing requirement was withdrawn.

The reindeer have done well, and although there were some losses in the original enclosure, the present herd of thirteen is thriving, and calves bred in Scotland are now promising animals.

This wasn't the first such experiment in Scotland. Attempts were made to introduce reindeer into the Highlands in 1816, but the project failed because the herd was simply let loose and the animals left to fend entirely for themselves. Today, not only are the reindeer under expert supervision, but herding is a more exact science than it was then.

The scheme is profiting from the knowledge obtained in promoting similar projects in other regions. In fact, reindeer herding is far more widespread today than 60 or 70 years ago. In 1894 some of these animals were imported into Alaska from Siberia, to meet a threat of starvation among the Eskimos.

A month old reindeer calf, one of a herd maintained in the Scottish Highlands. Photograph by J. Mackay, Aviemore.

By 1920, there were 50,000 reindeer where previously there were none at all. Twenty years later still the total was believed to have reached 1,000,000! The numbers have dwindled since then, due to over-grazing and wartime poaching by troops, yet considerable herds remain.

A big scheme of reindeer herding was also carried out in Canada's North West Territories during the 1930's. Some 2,400 reindeer were rounded up in Alaska—descendants of the small 1894 herd—and driven 3,000 miles to the Mackenzie River area. Some 2,000 of the animals reached that locality after a journey lasting two years.

Reindeer have actually been used instead of huskies to haul explorers' sleds, and in some areas the animal is as indispensable as cattle and sheep are to us. The Laplanders find many uses for them. Apart from serving as draught animals for sleds and providing meat, reindeer supply milk as rich as cream. Their sinews can be used as thread, and this does not rot with damp and is ideal for sports clothing. Their skins are often turned into garments and footwear; the hides are made into gloves, for they tan to a beautiful chamois-like surface, or are manufactured into jackets, rucksacks, and bags.

Laplanders make their tents with reindeer skins, and the antlers provide drinking vessels and household utensils.

When the idea of bringing reindeer to Scotland was first suggested, some people feared that the creatures might cause

Lapps on the move. Reindeer provide transport too. This illustration and that on the next page are reproduced by courtesy of the Swedish Tourist Traffic Association.

outbreaks of cattle diseases, but the sponsors pointed out that not one major epidemic has been reported in Scandinavia during the last fifty years.

Reindeer breeding is regarded as having a useful future in the Highlands. A herd of 300 might increase to 700 in three years, and they are far less troublesome than red deer. As semi-domesticated animals they can be controlled to a large degree and they need not invade

A Lapland scene, with a reindeer herd on the move.

farms in winter, as they can easily reach lichens under the snow. Three herdsmen can look after 1,000 reindeer in their spare time, and herding such animals is therefore suitable for crofters who are already established as sheep and cattle farmers.

A striking example of the hardiness of reindeer is provided by the Antarctic. Years ago a small herd was taken to the icy wastes of South Georgia by whalers from Norway, so that fresh meat might be available.

When the whalers left and the whaling station closed down, the animals had to be left behind, yet today they still thrive. Without any attention they have withstood the rigours of the great white territory, and have sustained themselves by foraging for the natural growths to be found under the snow.

Explorers in the Antarctic during recent years have sometimes found those Norwegian reindeer an unexpected but very welcome source for fresh meat. The herds there are believed to be considerable, though only a few score were transported by the whaling ships.

Reindeer meat has already been on sale in London, and although it was imported and did not come from Scotland it sold quickly. The demand was so great that several wholesalers who wanted supplies were unable to buy any. Reindeer meat has also been roasted as a substitute at ox-roasting ceremonies.

No doubt public interest was encouraged partly by the novelty of the idea, but the reintroduction of reindeer into Britain promises to become increasingly profitable, and the importance of the animal extends far beyond its traditional Christmas associations.

Box and Cox—*(Continued from page 649)*

Nowadays the Bachelor is usually alone when he visits the garden. For more than a fortnight he was followed everywhere by his offspring. Then one Sunday afternoon the loud *Tchik-tchik* of the young bird, whose call-note became more like his father's each week, was punctuated by the clash of body buffeting body as the young and old woodpeckers fought amid the swaying boughs of the silver birches. I was sorry a minute later to see Logman flying south with his father in pursuit. Anxiously I wondered how the youngster would fare if left to his own devices.

My fears were soon dispelled. At half-past five next morning, raucous cries of *Tchik-tchik* robbed me of sleep. Logman was eating fat and nuts. No day passes without several visits from both woodpeckers, who are now frequently—but not always—silent.

Even as I sat on the lawn typing this article, the Bachelor arrived and, perching on the fence, poked his bill into the top of a brown loaf; four minutes later his son appeared and proceeded to crouch forward, jabbing at the sides of the same loaf.

Clearly we should have called our woodpeckers Box and Cox.

MECCANO MAGAZINE

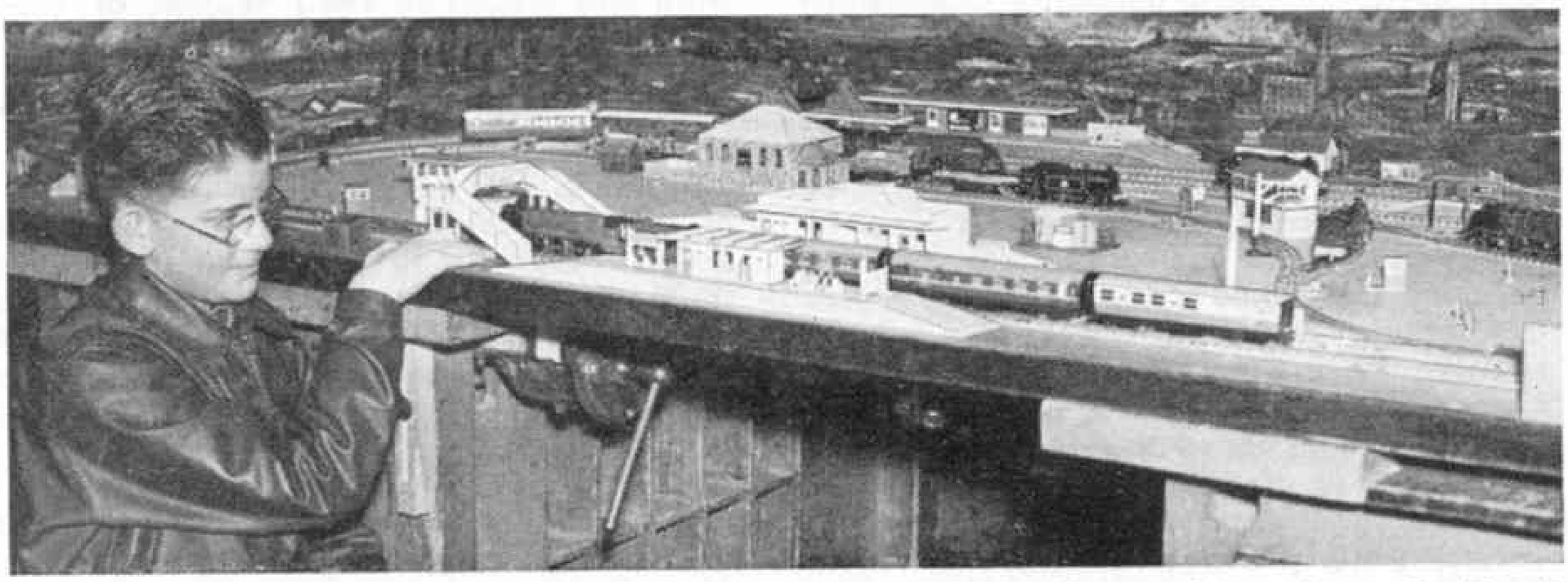
Junior Section

A MERRY CHRISTMAS

SOME time ago I included in the Magazine a picture of Winnie Arnold, who lives in Dublin, playing with her Dinky Builder Outfit, with which she was an adept at a very early age. Winnie is now seven, and when recently she was given the choice of a present she naturally selected a Meccano Outfit. Now here she is, in the picture on the right, making her first attempt at building a Meccano model. She seems to have the right idea, and all that is worrying her now is whether a girl can enter the model-building competitions announced in the Magazine! Well, model-building competitions are open to all Meccano enthusiasts, as ordinary *M.M.* contests are to every reader.

Before I go any further, I must remember to wish all of you the very happiest of times during the Christmas season. And that reminds me of something else. I like to include in this section of the Magazine pictures of younger readers with models they have built, with their Hornby or Hornby-Dublo Trains, or playing with their Dinky Toys, especially if they have built up a road layout on which to make good use of these. At Christmas there should be splendid opportunities for getting fine photographs of this kind, and I hope that many of you will do this and will send them along to me.

Winnie Arnold, of Dublin, making her first effort to build a Meccano model. She has been a Dinky Builder enthusiast for two years or so, and is now turning to more ambitious constructional efforts.



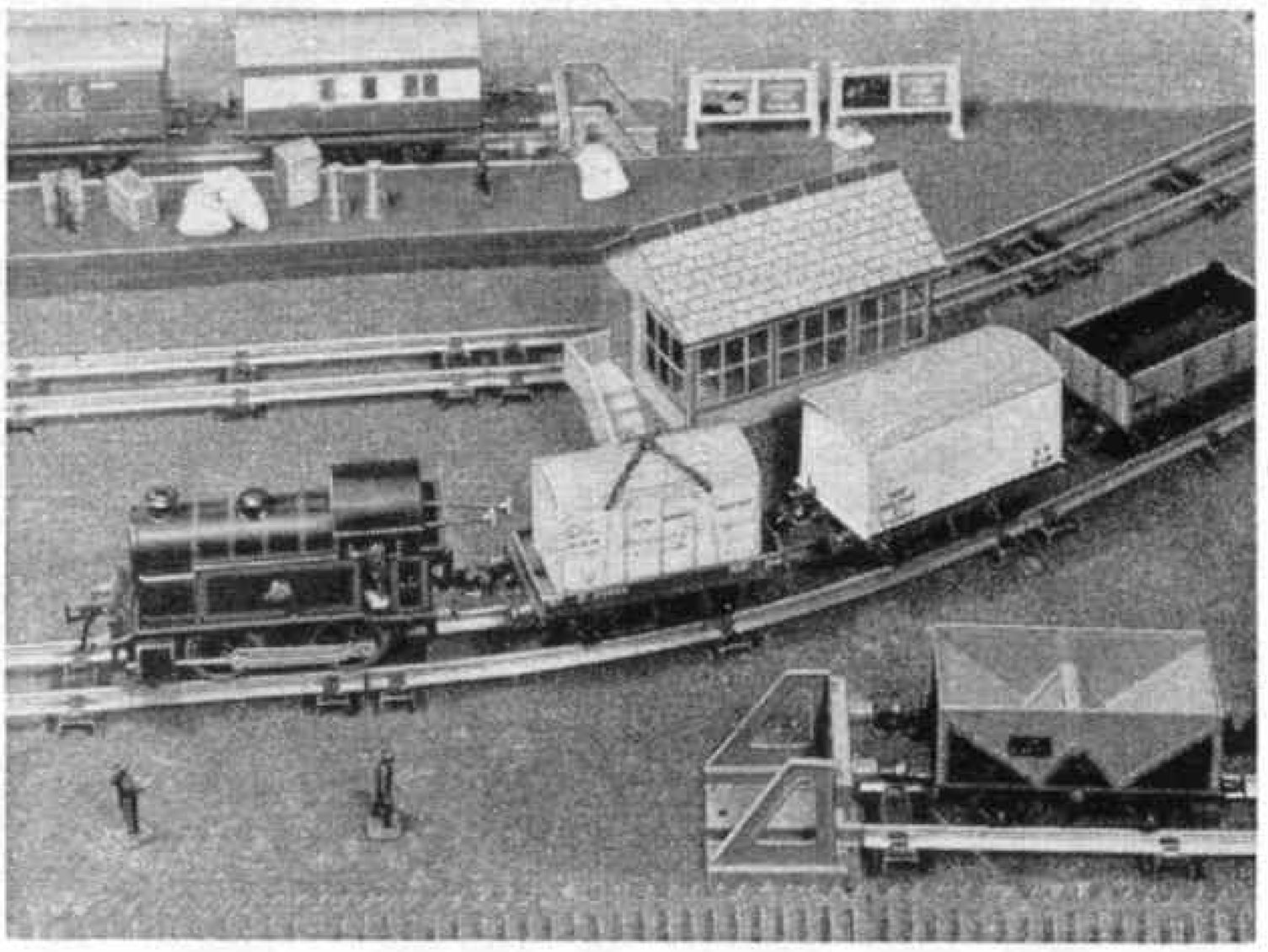
D. Sykes of the County Secondary School, Edlington, Branch of the H.R.C., controlling trains on the Branch layout. Photograph by courtesy of the "Doncaster Gazette."

Containers, Passengers and Goods

By "Tommy Dodd"

MOST of you will recall our talk a month or two ago on rail-road working in which, among other things, the working of container traffic on Hornby Railways was dealt with. I expect that all of you who are keen on that type of working will have noticed lately in dealers' shops a new feature—an Insulated Meat Container mounted on the usual low-sided Flat Truck. This is an additional type of Container in the System, the one already familiar for some time being the Furniture type.

The Furniture Container is finished in B.R. Passenger Red, but as you will see from the picture on this page, the new Container has a white finish corresponding in this respect with the familiar Refrigerator Van. The Hornby Insulated Meat Container is a splendid reproduction of the real B.R. one, and the details that appear on the sides and ends of the latter are very well reproduced on the miniature Container. The various doors with their hinges and locking handles, and the various strappings, securing rings and so on are all shown, as of course is the lettering and marking in the standard B.R. style, including details of dimensions and capacity.



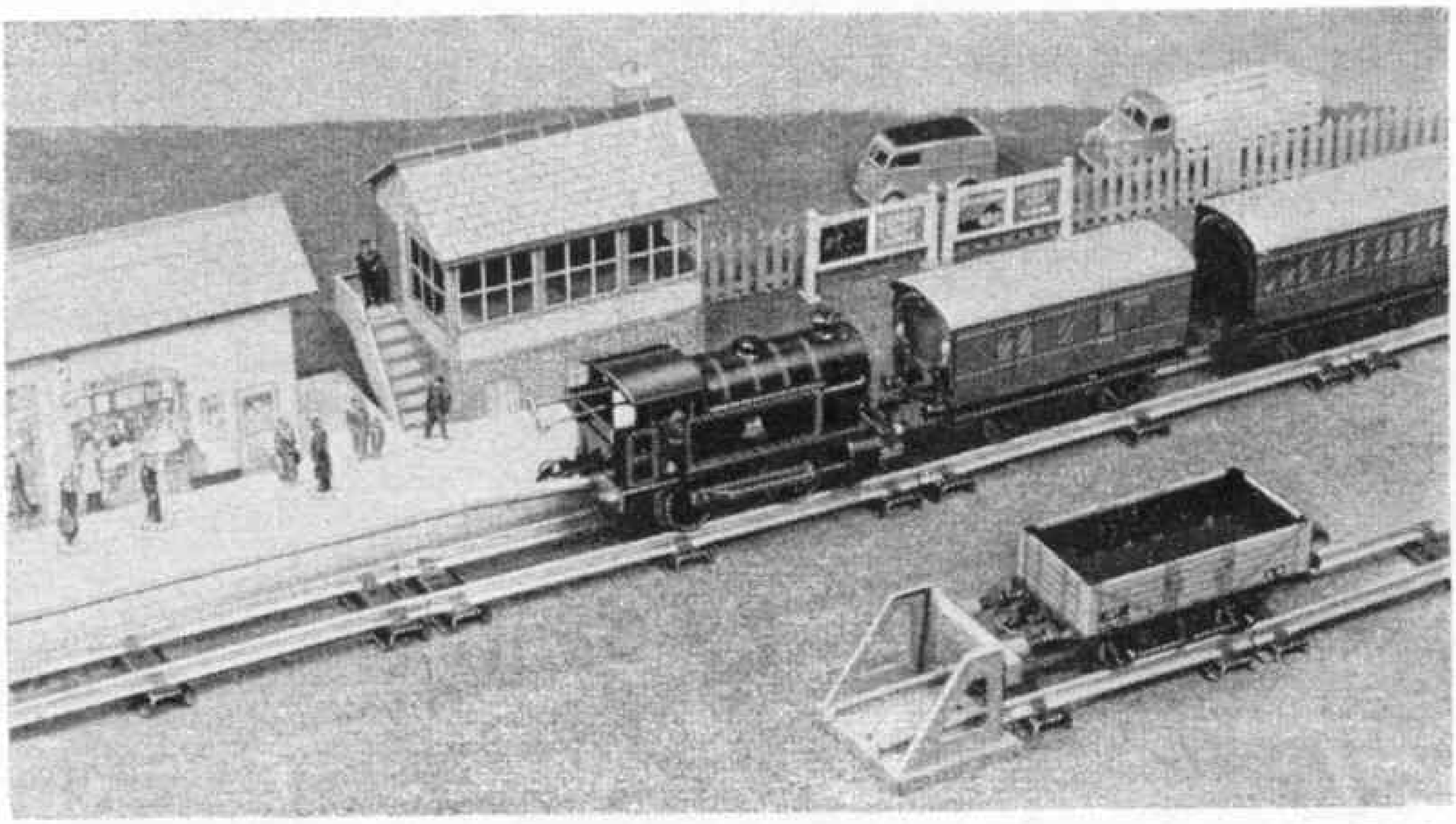
Perishable traffic vehicles are next to the engine of this pick-up goods. The first of them is the new Insulated Meat Container.

You can have plenty of fun with this new Container because it and its wagon can be used with others, or in company with some of the standard Refrigerator Vans, to make up an important train of perishable traffic. The fun does not end once the train has made its journey with Containers. You still have the job of running these from your Goods Depot to the miniature warehouse, shop or other destination. This is where your Dinky Toys come in, the Guy Flat Truck, Dinky Toy No. 432, as I have often told you before, being particularly suitable for the job. A prosperous miniature railway may even have a fleet of these vehicles specially for this work and the fun of "driving" these will add to the general variety of working the railway.

It is best to have a miniature road system for this road-rail traffic, but this is not absolutely necessary. Your railway may be on the carpet, and if so your road system can then be supposed to extend to almost anywhere on the floor.

Another point that most of you will appreciate is that there is another interesting activity involved in the running of Containers. You have to transfer them from rail wagon to road vehicle, or vice-versa, and this is where the Goods Yard Crane is most useful. It should be placed so that it can reach road or rail vehicles with ease, and it is a good plan to avoid placing it too near the Buffer-Stop end of a siding. You may want to deal with several Wagons in turn and you have more space to do this if the Crane is not too near the Buffers. The Crane is useful for many other purposes as well, and in the lower photograph on the next page you see it hoisting a case.

Do not forget that in any operation of this kind your miniature figures of railwaymen can be placed in realistic attitudes in a similar manner to those in the picture. You will find that all sorts



Here's the local train—Flyer, Dodger, Donkey or what you will—that the figures on this Hornby railway rely on for their transport.

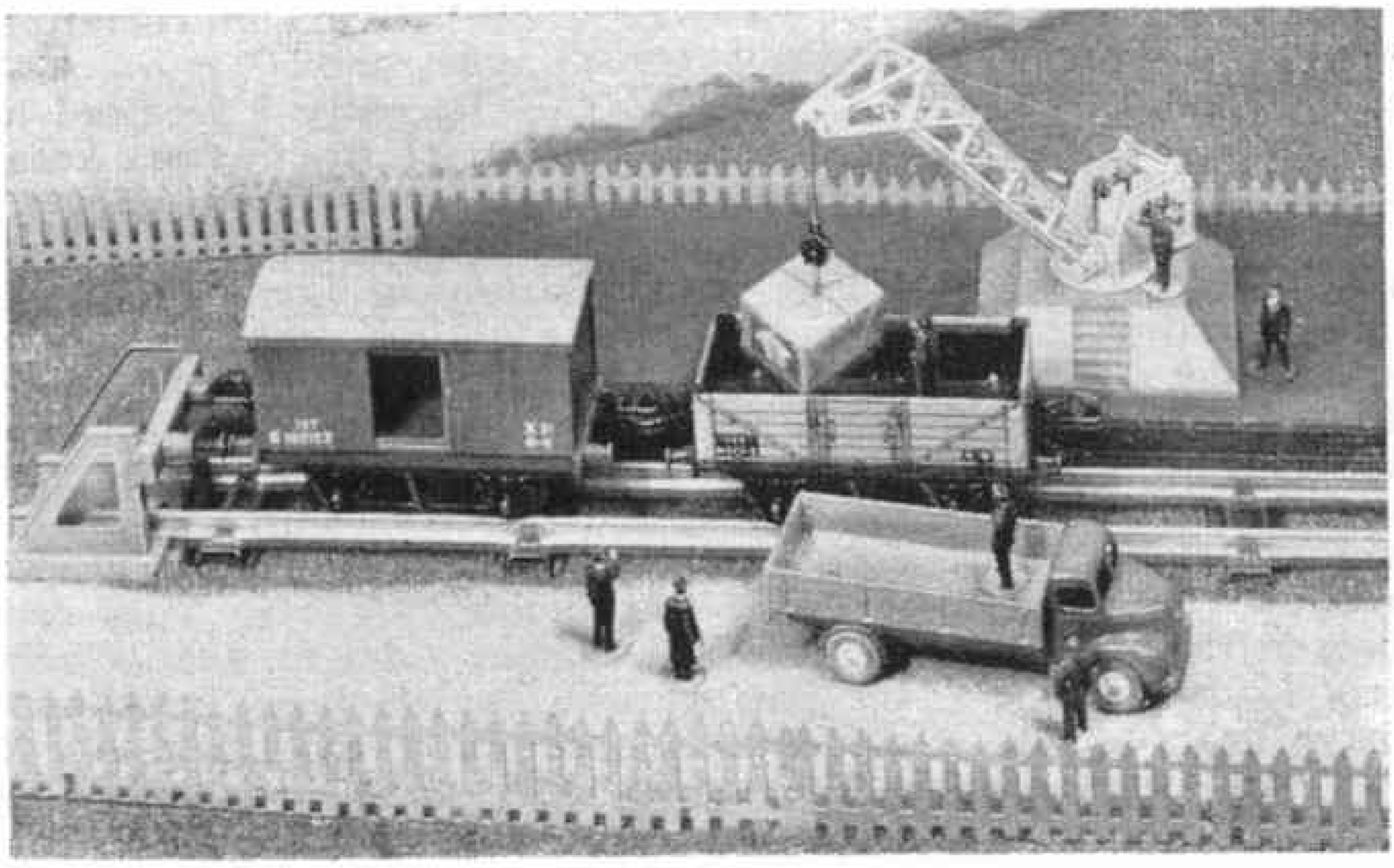
of variations in their setting are possible.

This applies equally well to the miniature figures of railwaymen and passengers that you have on your Station platform. All too often these are simply planted down on the platform, more or less anyhow, and then left until the miniature railway Manager feels like making a change. They have to be left in position, I agree, while you work your trains, but you should always endeavour to group them in an interesting and realistic way.

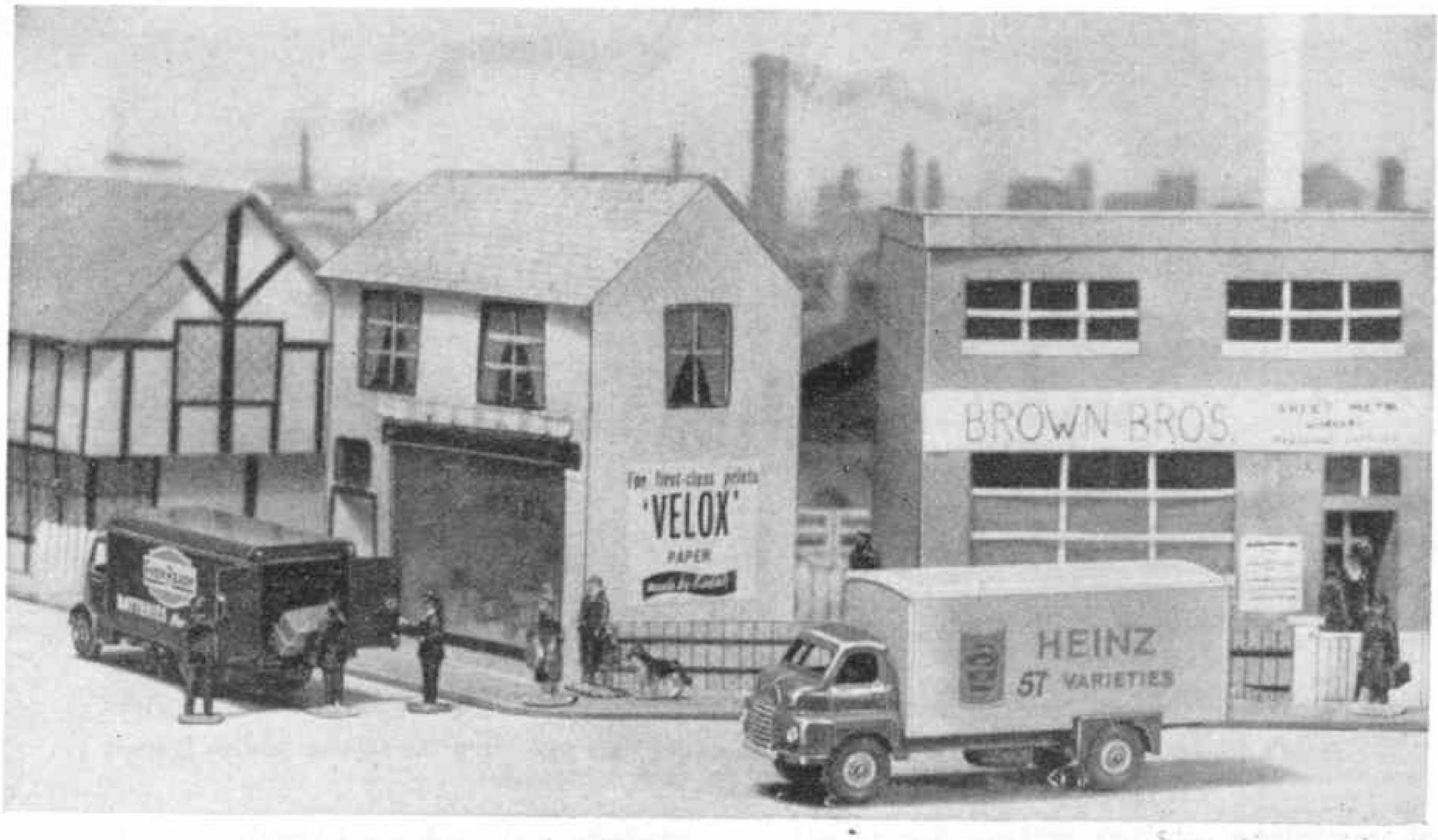
Plenty of figures are always needed and those that may not be wanted on the Station platform can always be used here and there outside the Station, at Level Crossings, Footbridges and so on. In this way a good deal of "life" can be given to the railway scene in general and the system will look as though it really does serve a useful purpose.

We should have some goods about our railway too, for an empty goods station or yard has a very bleak look. The Containers mentioned earlier suggest that some traffic is moving, of course, but we also need a few cases, sacks and similar things, on our freight platforms at least.

Little cases are easily made at home and those of you who are aero-modellers will not need telling how to make them up from wood, card and so on. Things such as matchboxes, small cartons, cotton bobbins and so on can often be pressed into use as loads. They can be used as they are, or perhaps modified and painted to improve their looks, then "roped" with thin string for lifting by crane.



"Up a bit!" calls the foreman to the crane driver as a case is being lifted from a Hornby Wagon to a Dinky Toys lorry by the Goods Yard Crane.



DINKY NEWS

By **THE TOYMAN**

Real Racing With Your Cars

A BIG Bedford Lorry, Dinky Toys No. 408, has been available for some time, but many enthusiasts have pointed out that they had only one van for use on their layouts. For them I have the good news that the splendid Big Bedford Van shown in my layout scenes, and in colour on the back cover of this issue, has now appeared. And there is also pictured in these two ways a second vehicle of this kind, a Guy Van in a completely new finish. So, with the "Spratts" already in the range, there are now three really attractive Vans to carry out deliveries on your layouts.

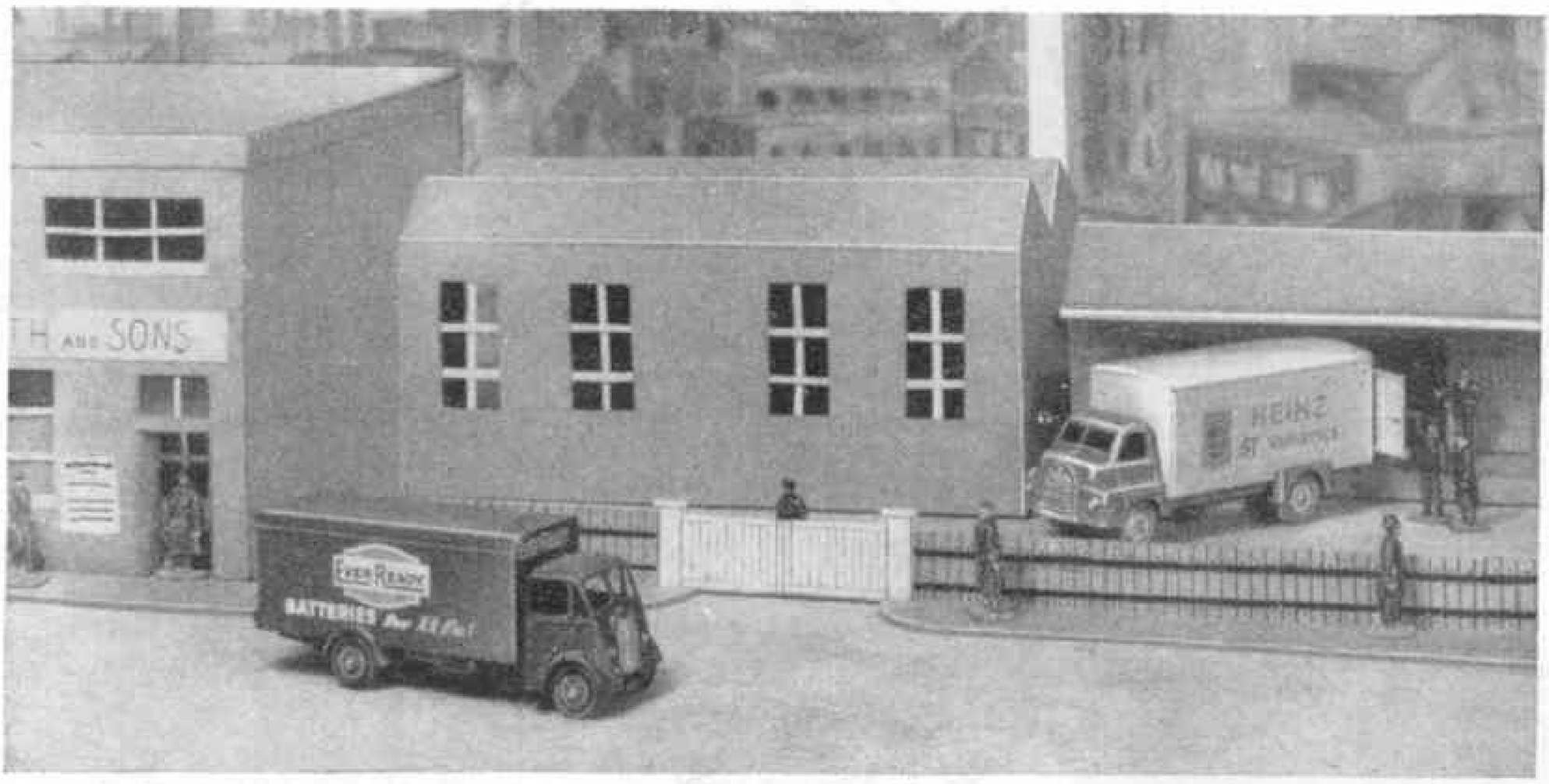
A realistic street scene showing the new Dinky Supertoys Vans, No. 918, Guy Van "Ever Ready" and No. 923, Big Bedford Van "Heinz."

The Big Bedford Van is included in the Supertoys range, with the number 923. It reproduces in full measure the striking design of the real vehicle. The cab and chassis of the model are red, while the body is finished in yellow. A spare wheel is carried underneath the chassis at the centre, as in actual practice. The body is fitted with opening doors at the rear so that you can really carry loads in your model, and the doors have neat catches that prevent them from opening accidentally while the Van is in motion. Each side of the body carries the well known Heinz transfers, resulting in a most attractive and realistic appearance.

The Guy Van is also included in the Supertoys range, in which its number is 918. The body too is fitted with hinged doors at the rear. The cab, chassis and body are enamelled in a striking deep blue, while the wheel centres are red. Ever Ready transfers are applied to the sides and the front of the body and give the model a most attractive and colourful appearance.

Recently I received a letter from two keen Dinky Toys enthusiasts, Master P. E. Long and Master F. C. Barton, of London S.E.12. These boys have quite a large collection of Dinky Toys Racing Cars, and they have devised an exciting race game to play with their models. They arrange races along a track formed by lengths of corrugated iron set at a slight angle and mounted on suitable supports. They tell me that the Racing Cars fit neatly into the corrugations, which form lanes and guide the models along the track.

The game suggested by these two enthusiasts is an ingenious idea, and the



Another view of the new Vans. In this scene the Big Bedford is shown with its doors open ready for unloading.

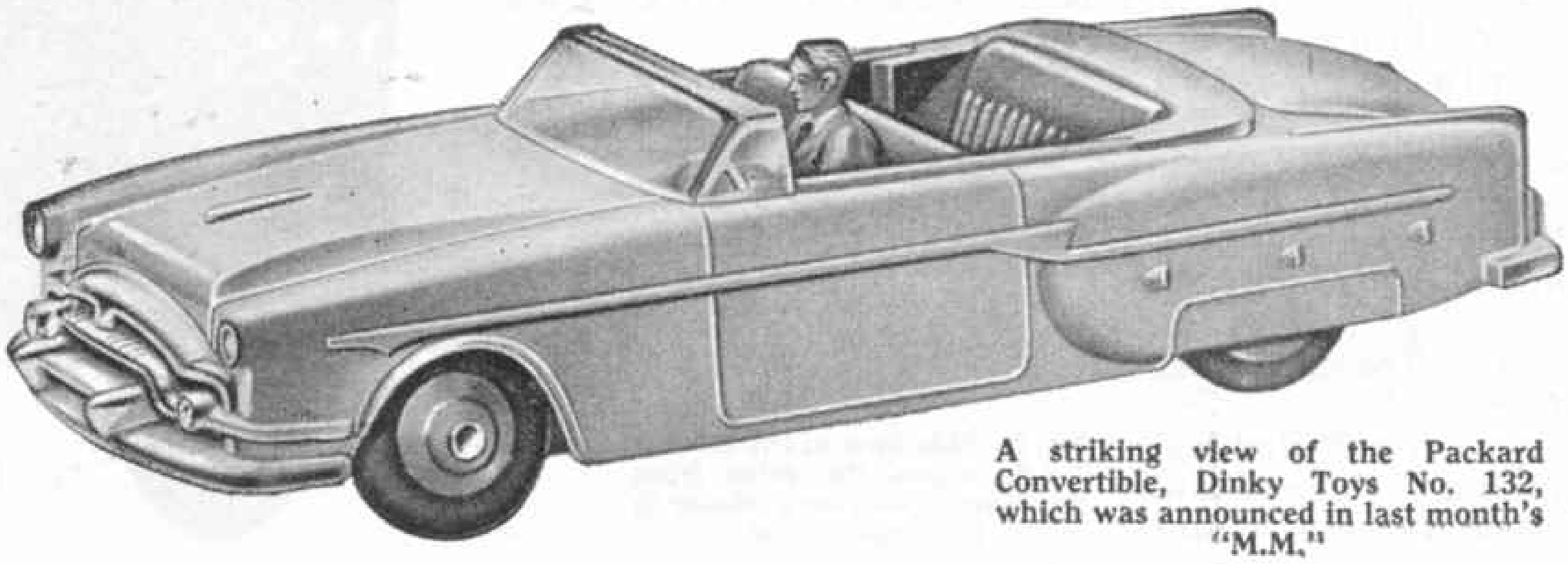
corrugated iron track may be quite satisfactory as long as the race is staged outdoors. Suitable corrugated iron is not always available however, and in any case most boys play with their Dinky Toys indoors during the winter months. The appearance of several lengths of corrugated iron in the living room is not likely to be encouraged!

It should not be difficult to find alternative material for a game of this kind, however, and from experiments I have made, sheets of the corrugated cardboard often used for packing purposes seem to give promising results, providing they are suitably supported. Alternatively Meccano enthusiasts could make good use of their Strips and Angle Girders by bolting them to lengths of wood or cardboard to make guide rails for the Racing Cars.

Meccano could be used also to make a simple automatic gate at the start of the track, with a lever arrangement to release all the cars in the race at the same time. If possible the end of the track should be arranged slightly uphill, so that the cars slow down gradually after they have passed the finishing line.

It should be possible to arrange some really exciting races on these lines, particularly if several enthusiasts get together so that there is real competition. If there are many competitors it may be necessary to arrange several heats, with the fastest cars in each heat competing in the final race just as in actual practice.

I know that many other Dinky Toys enthusiasts have devised interesting play schemes of various kinds in which they use their favourite Dinky Toys, and although some of them write to me from time to time and keep me informed of their activities, there are undoubtedly many others who have equally good and attractive schemes but have not written to me, probably because they feel that their own ideas will not interest other collectors. If any of these should see these notes I do hope they will accept this invitation to write to me, and if possible send photographs of their play schemes.



A striking view of the Packard Convertible, Dinky Toys No. 132, which was announced in last month's "M.M."

Easy Model-Building

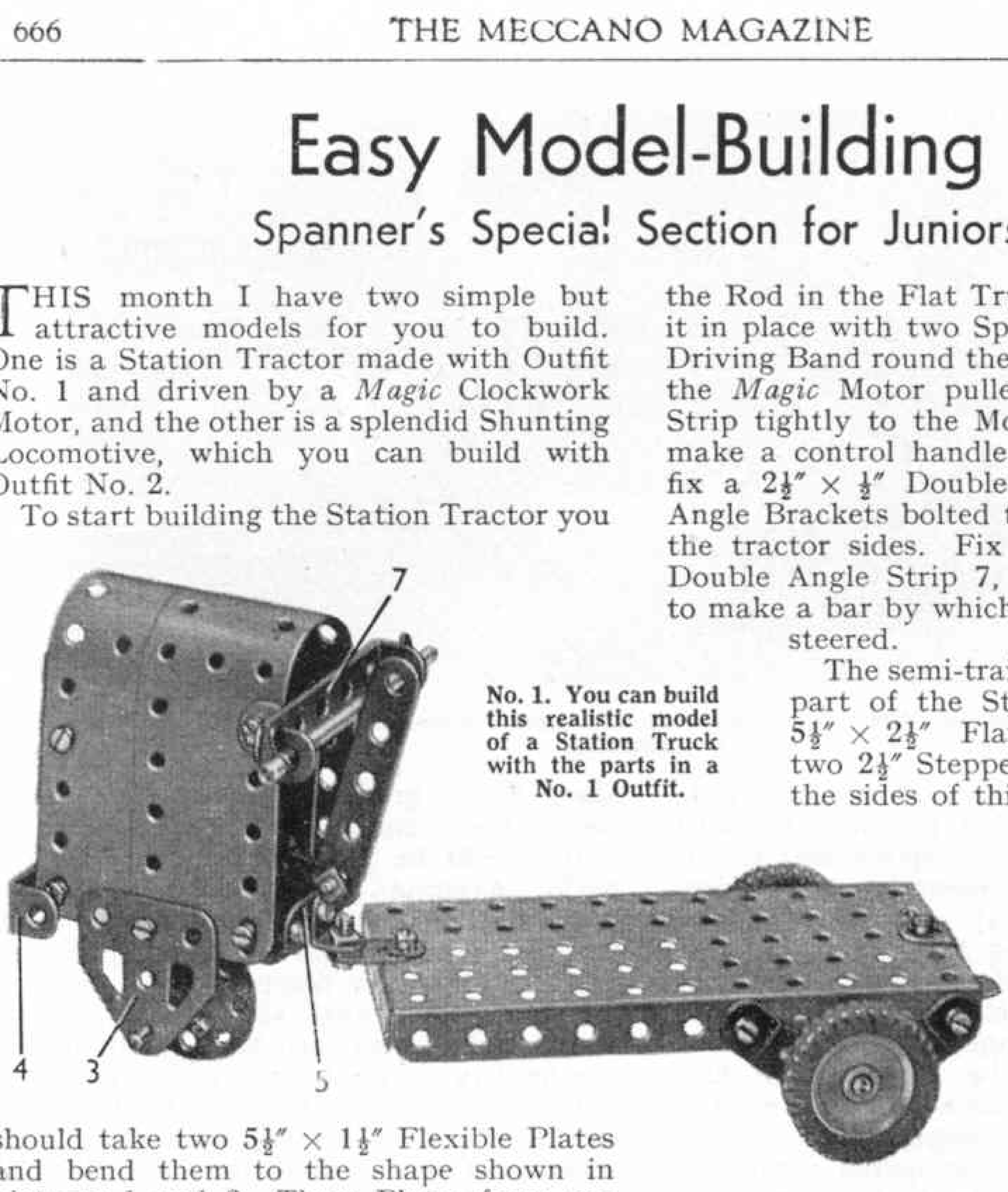
Spanner's Specia! Section for Juniors

THIS month I have two simple but attractive models for you to build. One is a Station Tractor made with Outfit No. 1 and driven by a *Magic* Clockwork Motor, and the other is a splendid Shunting Locomotive, which you can build with Outfit No. 2.

To start building the Station Tractor you should take two 5½″ × 1½″ Flexible Plates and bend them to the shape shown in pictures 1 and 2. These Plates form one side, the top and part of the other side of the tractor. Bolt two 2½″ Strips 1 in position and connect them at their lower ends by another 2½″ Strip 2. This assembly completes the sides and the top of the tractor.

The next step is to bolt a *Magic* Clockwork Motor to one side as shown in picture No. 2, then fix a Flat Trunnion 3 to each side of the tractor. The sides are connected at the front by a 2½″ × ½″ Double Angle Strip 4 bolted to Angle Brackets, and at the back by a bracket 5 made from two Fishplates bolted together. This bracket also is attached to Angle Brackets fixed to the sides. You should complete the front of the tractor by bolting in place two Trunnions (see picture No. 2).

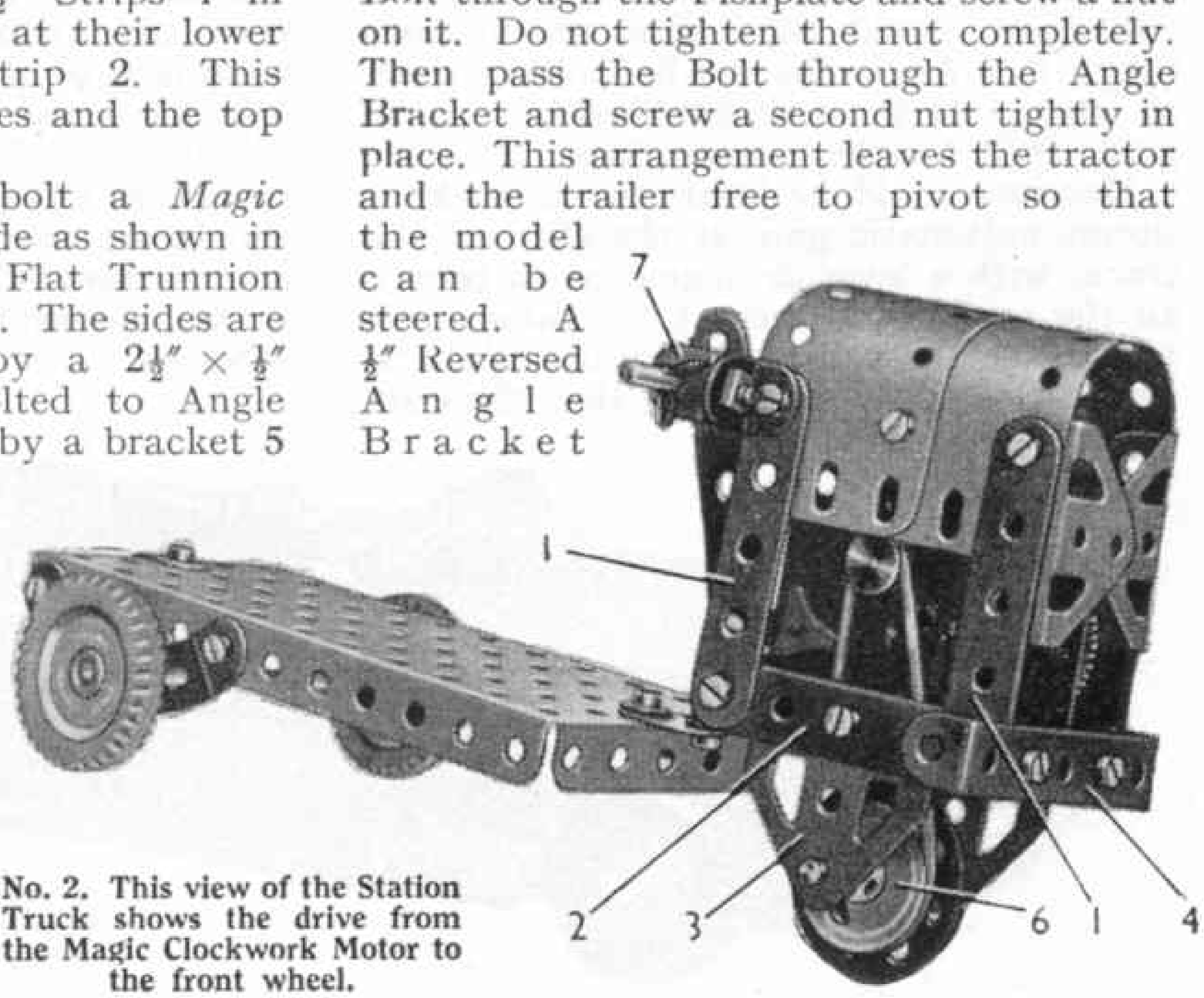
Now take a 2″ Rod and fix on it a 1″ Pulley 6 and a Bush Wheel. Mount the Rod in the Flat Trunnions 3 and hold it in place with two Spring Clips. Place a Driving Band round the Pulley 6 and round the *Magic* Motor pulley, and bolt a 2½″ Strip tightly to the Motor brake lever to make a control handle. You should now fix a 2½″ × ½″ Double Angle Strip 7 to Angle Brackets bolted to the rear edges of the tractor sides. Fix a 3½″ Rod in the Double Angle Strip 7, using Spring Clips to make a bar by which the tractor can be steered.



No. 1. You can build this realistic model of a Station Truck with the parts in a No. 1 Outfit.

The semi-trailer or load-carrying part of the Station Tractor is a 5½″ × 2½″ Flanged Plate. Bolt two 2½″ Stepped Curved Strips to the sides of this Plate and mount in them a 3½″ Rod that carries the trailer wheels. These wheels are 1″ Pulleys fitted with Motor Tyres.

To connect the tractor to the trailer you should bolt an Angle Bracket to the bracket 5 and a Fishplate to the front of the Flanged Plate. Now pass a ⅜″ Bolt through the Fishplate and screw a nut on it. Do not tighten the nut completely. Then pass the Bolt through the Angle Bracket and screw a second nut tightly in place. This arrangement leaves the tractor and the trailer free to pivot so that the model can be steered. A ½″ Reversed Angle Bracket



No. 2. This view of the Station Truck shows the drive from the Magic Clockwork Motor to the front wheel.

bolted to the rear of the Flanged Plate forms a towing attachment to which a second trailer can be coupled if required.

You will require the following parts to build the Station Tractor: 4 of No. 5; 3 of No. 10; 7 of No. 12; 2 of No. 16; 1 of No. 17; 3 of No. 22; 1 of No. 24; 4 of No. 35; 27 of No. 37a; 24 of No. 37b; 1 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 2 of No. 111c; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 2 of No. 142c; 2 of No. 189; 1 *Magic* Clockwork Motor.

To make the attractive Shunting Locomotive take a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate and to each side of this bolt two $5\frac{1}{2}''$ Strips. These Strips are overlapped nine holes so that one of them overhangs the rear end of the Flexible Plate by two holes. This assembly makes the main frame or chassis of the model.

For the boiler two $1\frac{11}{16}''$ radius Curved Plates are bolted together so that they make a cylinder of almost the same diameter as a Bush Wheel. A Bush Wheel 1 is then bolted to an Angle Bracket fixed to the front end of the boiler by a $\frac{3}{8}''$ Bolt. This is fitted with two nuts, a Washer and a second nut to represent the chimney. The steam dome 2 is a bolt fitted with two Washers. The boiler is supported by a $\frac{1}{2}''$ Reversed Angle Bracket bolted to the main frame.

The fire-box 3 consists of a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. Bend this to the shape shown, then attach it to Angle Brackets bolted to the main frame, using the same bolts to fix $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates 4 that represent the water tanks.

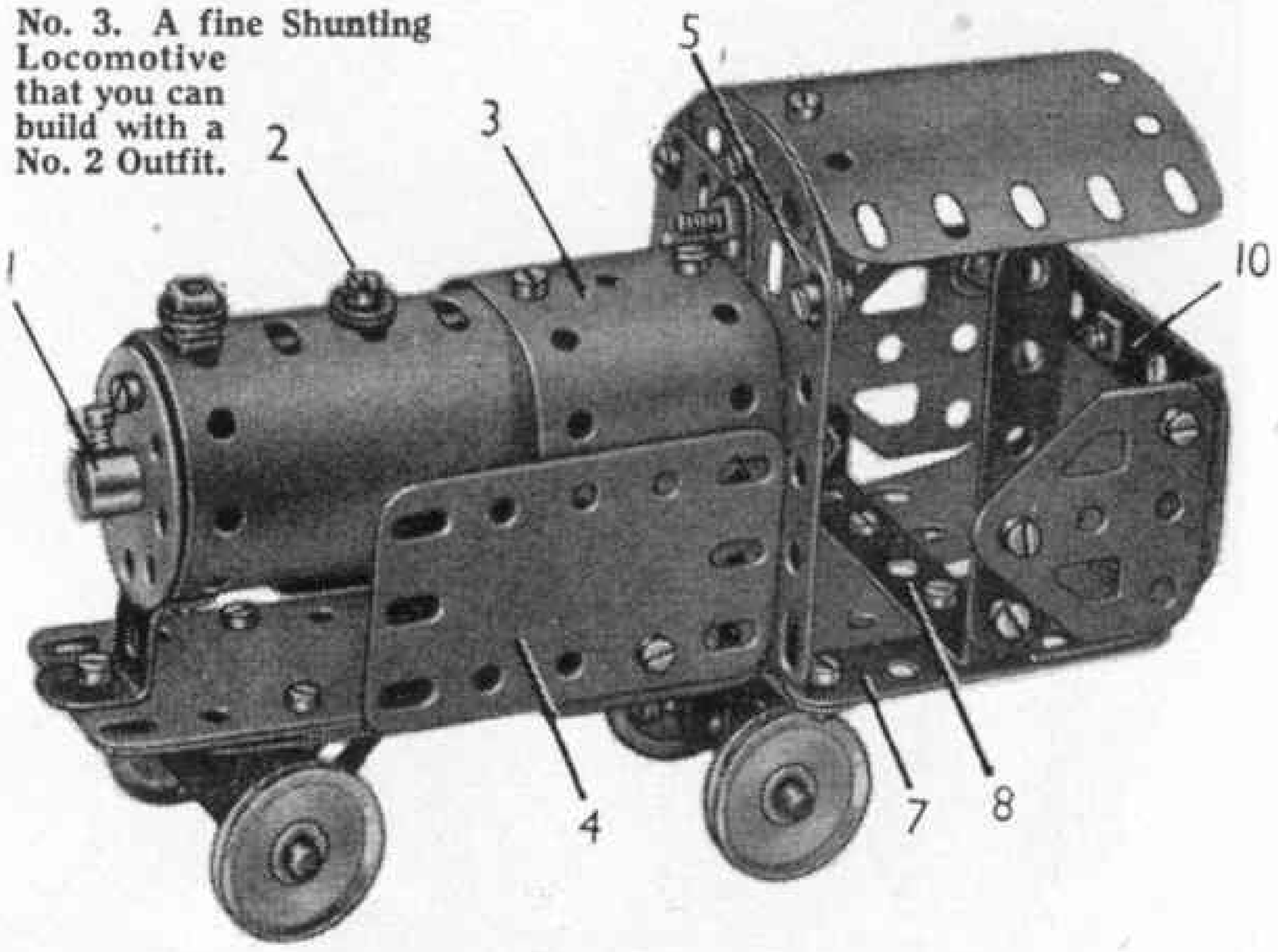
Now fix a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 5 to an Angle Bracket bolted to the rear end of the fire-box 3, and attach a $2\frac{1}{2}''$ Strip 6 to the main frame. A $2\frac{1}{2}''$ Strip 7 is then bolted to each end of Strip 6, and a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 8 is fixed across the main frame. The bolts holding the Double Angle Strip attach also a U-section Curved Plate 9 that is opened out slightly. Fix a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 10 to the upper edge of Curved Plate 9 and bolt Flat Trunnions between the lugs of this Double Angle Strip and $2\frac{1}{2}''$ Strips attached to the lugs of Double Angle Strip 8.

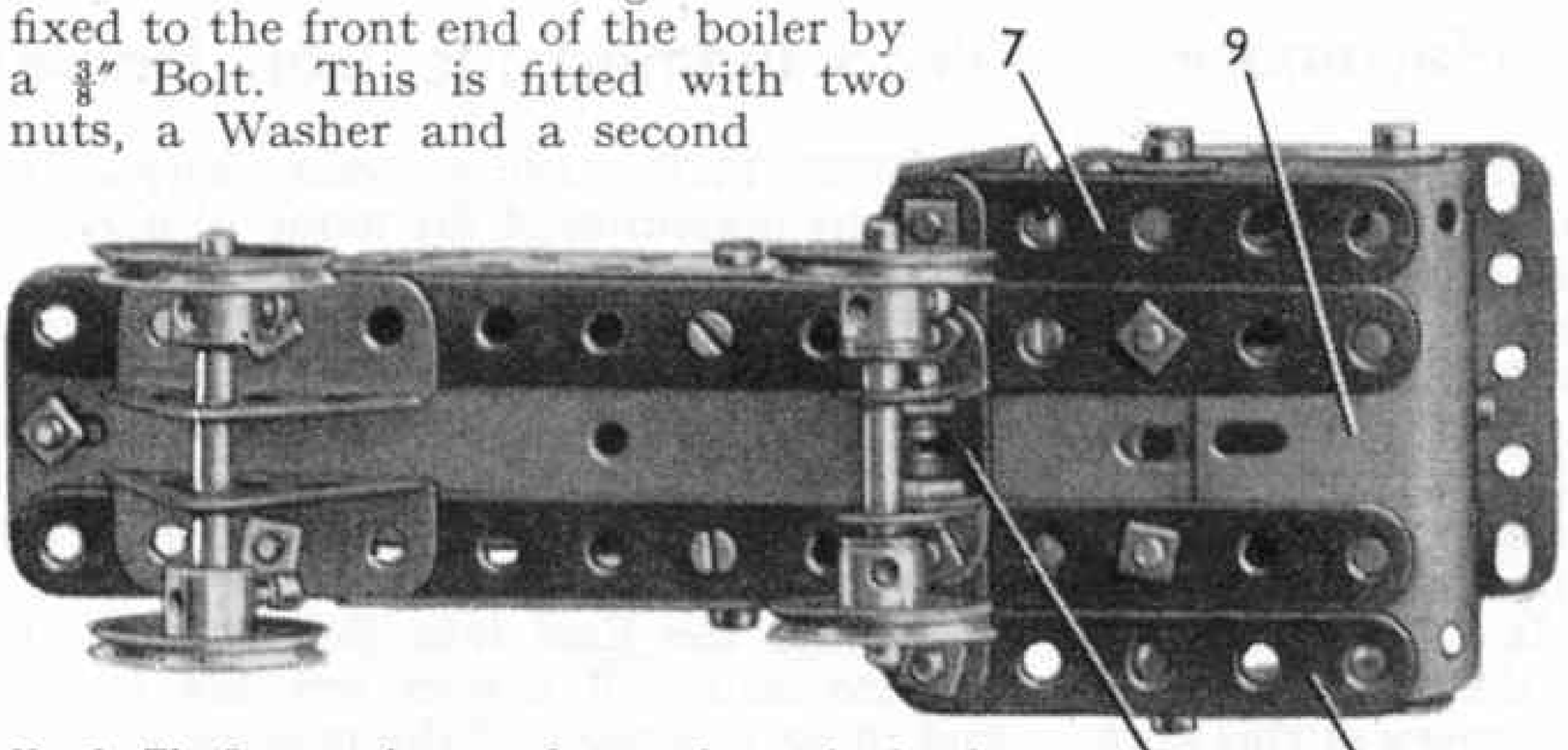
The roof is a curved $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate and is attached by an Angle Bracket to a $2\frac{1}{2}''$ Stepped Curved Strip bolted to the Flexible Plate 5.

The model is now ready for fitting the wheels. These are 1" Pulleys fixed on 2" Rods, the front one of which is mounted in Trunnions bolted to the main frame. The Rod carrying the rear wheels is supported in two Fishplates, each of which is attached to an Angle Bracket bolted to the main frame. This final stage in building the locomotive is made clear in picture No. 4.

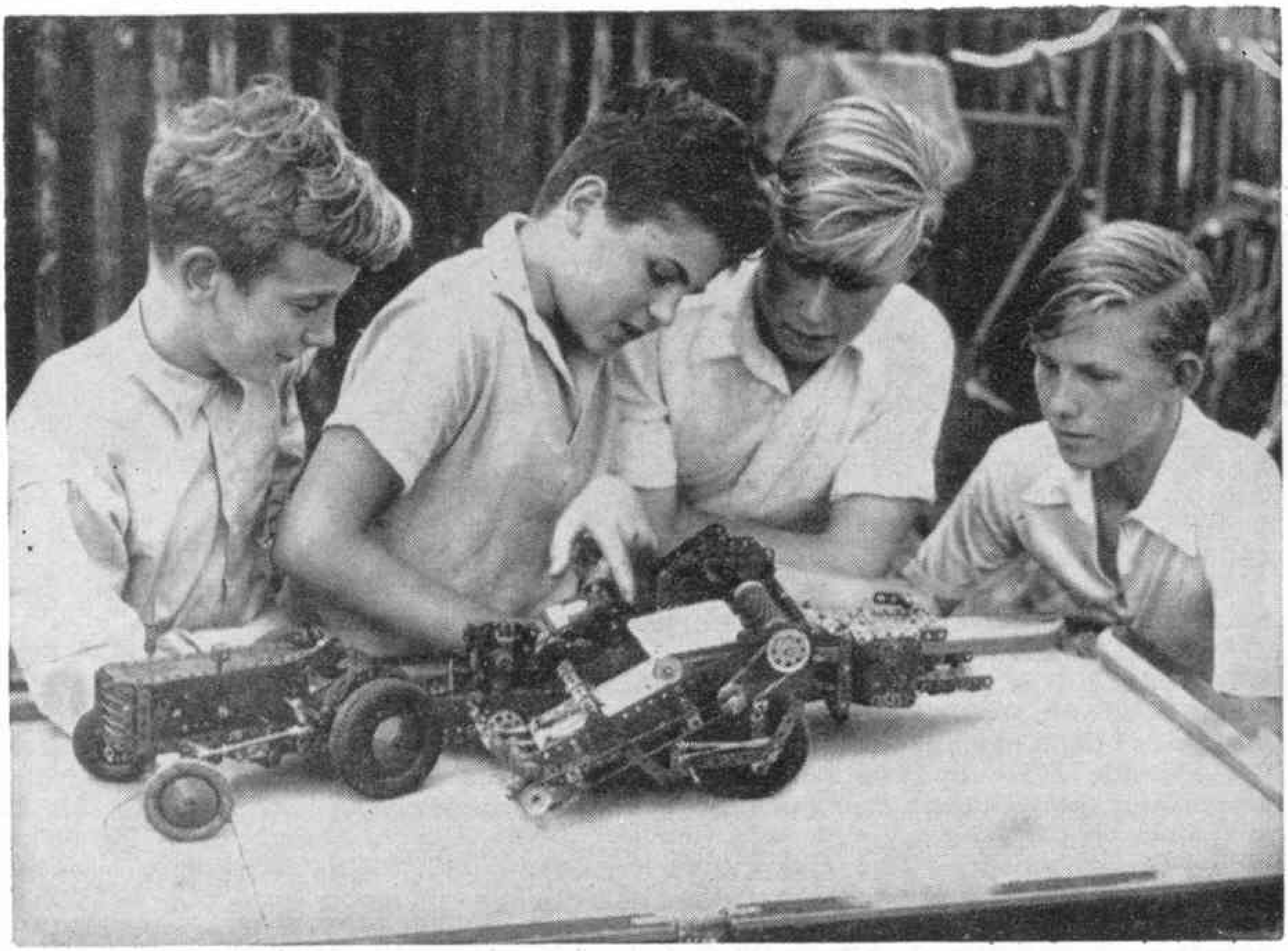
Parts required to build the Shunting Locomotive: 4 of No. 2; 4 of No. 5; 2 of No. 10; 7 of No. 12; 2 of No. 17; 4 of No. 22; 1 of No. 24; 36 of No. 37a; 31 of No. 37b; 8 of No. 38; 2 of No. 48a; 1 of No.90a; 3 of No. 111c; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 199; 2 of No. 200.

No. 3. A fine Shunting Locomotive that you can build with a No. 2 Outfit.





No. 4. The Locomotive seen from underneath, showing the way in which the wheels are fitted.



Miniature Farm Machinery

THE farm tractor and baler seen in the picture on this page, reproduced by courtesy of the *Evening Advertiser*, Swindon, were built by Peter Cooke, of Little Hinton Farm, near Swindon, after he had studied carefully the baler and tractor used on his father's farm. They work, as all good Meccano models should, and Peter is here seen demonstrating their movements to his friends. The only thing that the baler will not do is tie knots.

What a difference machinery of this kind has made on the farm! Years ago, for instance, a hayfield was thronged with workers who turned the hay, gathered it into swathes with horse-drawn rakes and then piled it up into cocks to dry before finally carting it to the farmyard to be stacked, if this were not to be done in the fields. When it was to be used the hay was cut laboriously into bales, which were tied with ropes. Nowadays the hay is picked up on the field and baled and tied mechanically. There has been a great gain in time and convenience, and many of the machines now used are fine subjects for Meccano models.

Who Named the Iron Horse?

RECENTLY I read a curious story about the invention of the name Iron Horse that is sometimes applied to the steam locomotive. According to this story Buffalo Bill believed that the name was coined by Sitting Bull, the famous Sioux Indian Chief, who spoke to him of iron horses that ate wood and breathed fire and smoke, which had brought white men from the East into the lands of the Indians and had driven out the buffalo and other creatures of the prairies.

This is very picturesque, and it is quite possible that Sitting Bull did invent the name for himself. But I feel sure that he was not the first. Locomotives were called horses as early as 1830 by Fanny Kemble, the famous actress, in an account of a trip on a locomotive that she enjoyed between Liverpool and Sankey Viaduct in that year with George Stephenson himself at the throttle, for in it she refers to the engine as a Fire Horse. The name Steam Horse also was used very early. So it seems likely that somebody in those pioneer days would have thought of describing the locomotive as an Iron Horse.

Bird Hunting in the Bush

By John Warham

IF, by some unhappy accident, all the birds and animals found in Britain were suddenly to die out, it would still be possible to see almost every one of them elsewhere in Europe. But were such a tragedy to befall Australia, well over 100 kinds of animals alone would disappear for ever, since so many Australian birds and beasts are to be found nowhere else in the world.

Despite clearing of the forests and much settlement, the Australian bush remains a wonderland for the naturalist. Wildlife still abounds in many places, and this was the lure that enticed my wife and myself to leave Britain one grey September morning two years ago on a self-supporting expedition to study these animals and birds at first hand.

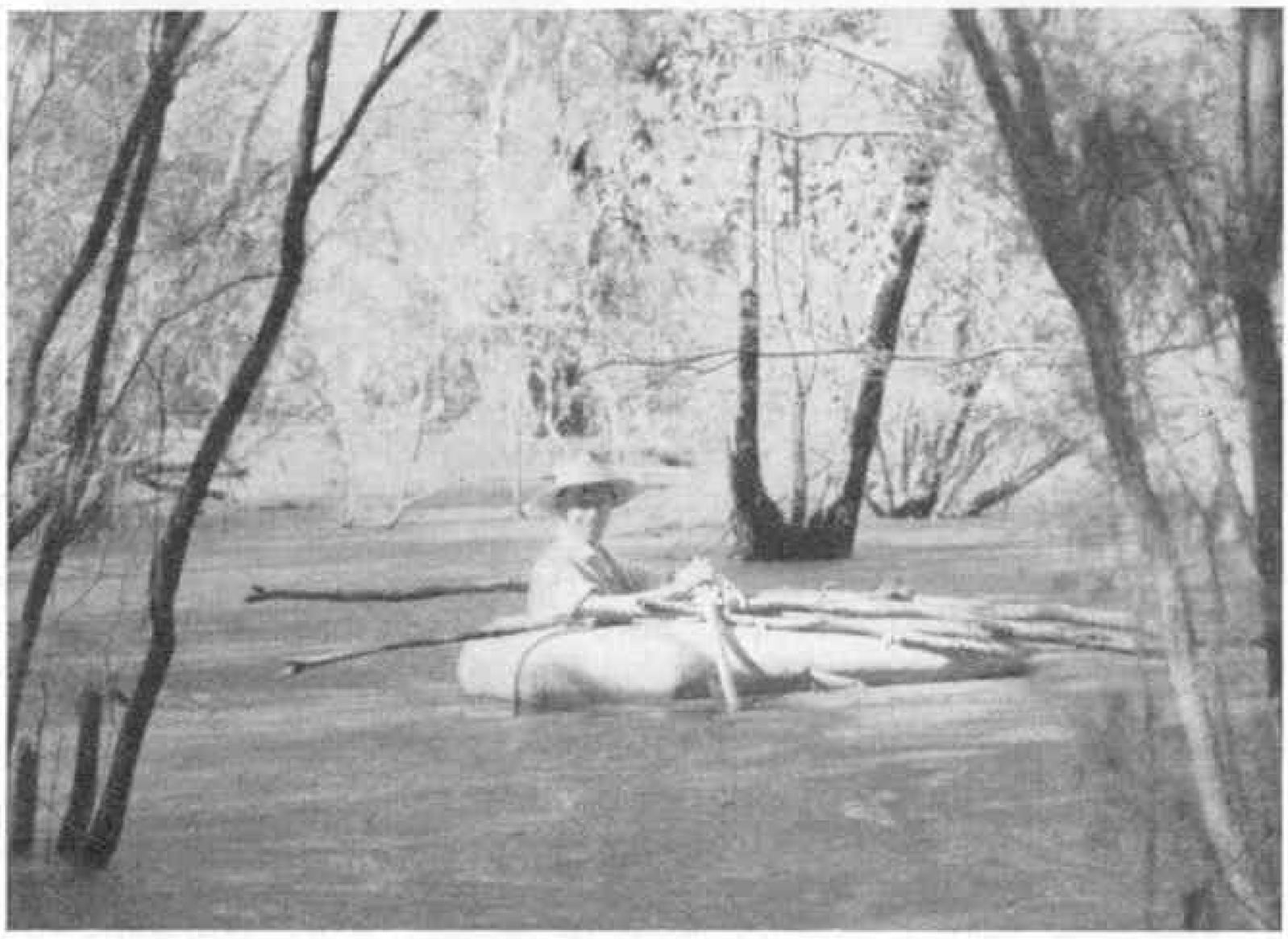
Our home since our arrival has been an ex-R.A.F. 15 cwt. wireless van from the last war. It is fitted with strong "track-grip" tyres for cross country work. We also have a roomy tent, a small electric generator for lighting and for charging the batteries used for our high-speed camera, and the usual array of camp beds and cooking gear.

A piece of equipment that has proved its worth time and again is a one-man rubber dinghy that is seen in use in the picture on this page. The dinghy is very light and can be carried deflated until required. It is very useful when working among swamps and lakes; with the help of a paddle we can glide silently along through the reeds and beneath the trees although, since there is no rudder, our course is inevitably a somewhat meandering one.

Photographic gear includes cameras, tripods, flash equipment for picture making after dark, and other items such as sharp irons for fastening to boots when climbing trees, and ropes and metal spikes for work among cliffs and rocky places.

Driving in the settled parts of Australia is much like driving back home in England. There are good roads which are usually well looked after. But further outback all roads are of loose gravel. These are often full of pot holes and the surface is worked up into a series of short ridges or corrugations, which make driving along them a tiring business. Many tracks wind through the bush and across wide sand plains, so that the going is very hard. And, of course, distances are immense. To cross from the west coast to the east coast takes five days, even if you can manage to keep up 400 miles per day; this is equivalent to a journey from London to Moscow.

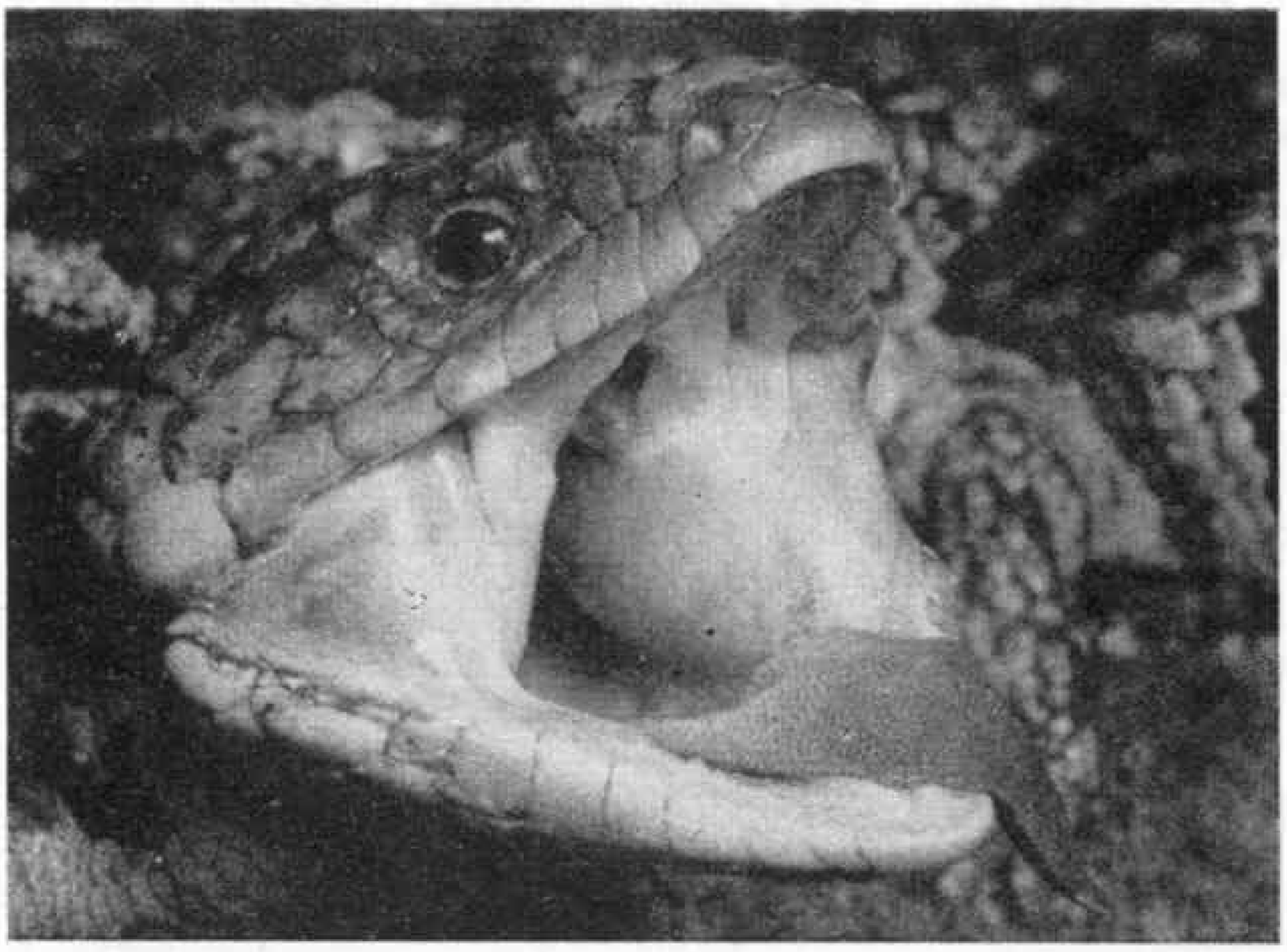
Camping seldom poses many problems. The weather is usually fine, and even in the agricultural areas you can pull off the road and find shady spots for pitching the tent or for sleeping beneath the stars. A typical camp centres around the tent, which acts as a bedroom-cum-dining room. Nearby is the camp fire and the truck acts as a storeroom for all the odds and



Off into the swamp where hundreds of ibis were nesting. A simple paddle guides the dinghy through the bushes. The poles were for building a hide-out in the tree tops from which to watch the birds.

ends. We have electric light and a radio, a heavy groundsheet to lay across the floor, a table and folding stools—all that is necessary to make such a nomadic life reasonably comfortable.

We see lots of birds and animals while on the move. Parrots and cockatoos are very common and they come in all sorts of bright colours. There are greens, reds, blues and yellows, and many an Australian family has a tame "cocky" in the house. Many of these birds come to be able to repeat whole sentences of human speech and they can often state the names of their owners.



A worm's eye view of a bobtail giving its threat display. The bobtail is a fat stumpy lizard.

An amusing incident was reported recently in the papers out here when a well-loved cockatoo was stolen from a certain house. The owner, whom we'll call Bob Green, eventually managed to trace the lost bird in the possession of someone living several miles away in another part of the same city.

But the new owner refused to admit that the cockatoo had been stolen and as there were no distinguishing marks by which the bird could be identified, Bob Green took the matter to court. When all of them were before the magistrate, Bob Green turned to the cockatoo and said *And who's cocky are you?* Whereupon the bird replied, without a trace of hesitation, *Why, I'm Bob Green's cocky, of course!*

So that was that and the cockatoo was soon back in the hands of its rightful owner.

But in addition to birds such as these, many other kinds may be seen while on the road. There are plovers and herons, glorious little wrens as blue as a kingfisher and a good selection of hawks and eagles. Some of the latter are so big that their wings may measure as much as ten feet from wing tip to wing tip. Emus are still common in the remoter areas and we have several times had small parties galloping along the road in front of us, keeping up a steady 30 m.p.h. until they eventually veered off into the bush.

Kangaroos and wallabies sometimes leap out from the roadside—they can be a real hazard in some parts when driving after dark.

The term "bush" out here covers a wide variety of country from dense forest, with big timber, to open country with scattered trees and semi-desert regions clad only with unpleasant and prickly scrub.

Islands are always fascinating and we have visited some not previously explored by naturalists. Oddly enough, although these trips have usually been made in rough weather, the least agreeable journey was also the shortest. We were returning from Lancelin Island, on the coast of Western Australia, about 80 miles north of Fremantle, a small sandy place only a mile out to sea, when our boat was swamped upon reaching the beach and we snatched our cameras and electrical gear from the waves just in the nick of time.

Still we had had a successful ten day stay with only the sea birds as neighbours. We studied the nesting seabirds and rock parrots, photographed the kestrel and found the huge nest of a fish-hawk.

The kestrel had its home in the hole in a limestone cliff seen in the upper illustration on the next page. It fed the young ones on lizards, which were found while the bird hovered in the sky with its head to the wind as it scanned the ground with keen eyes, ready to note the slightest

An Australian kestrel at the entrance to its home in the cliff.

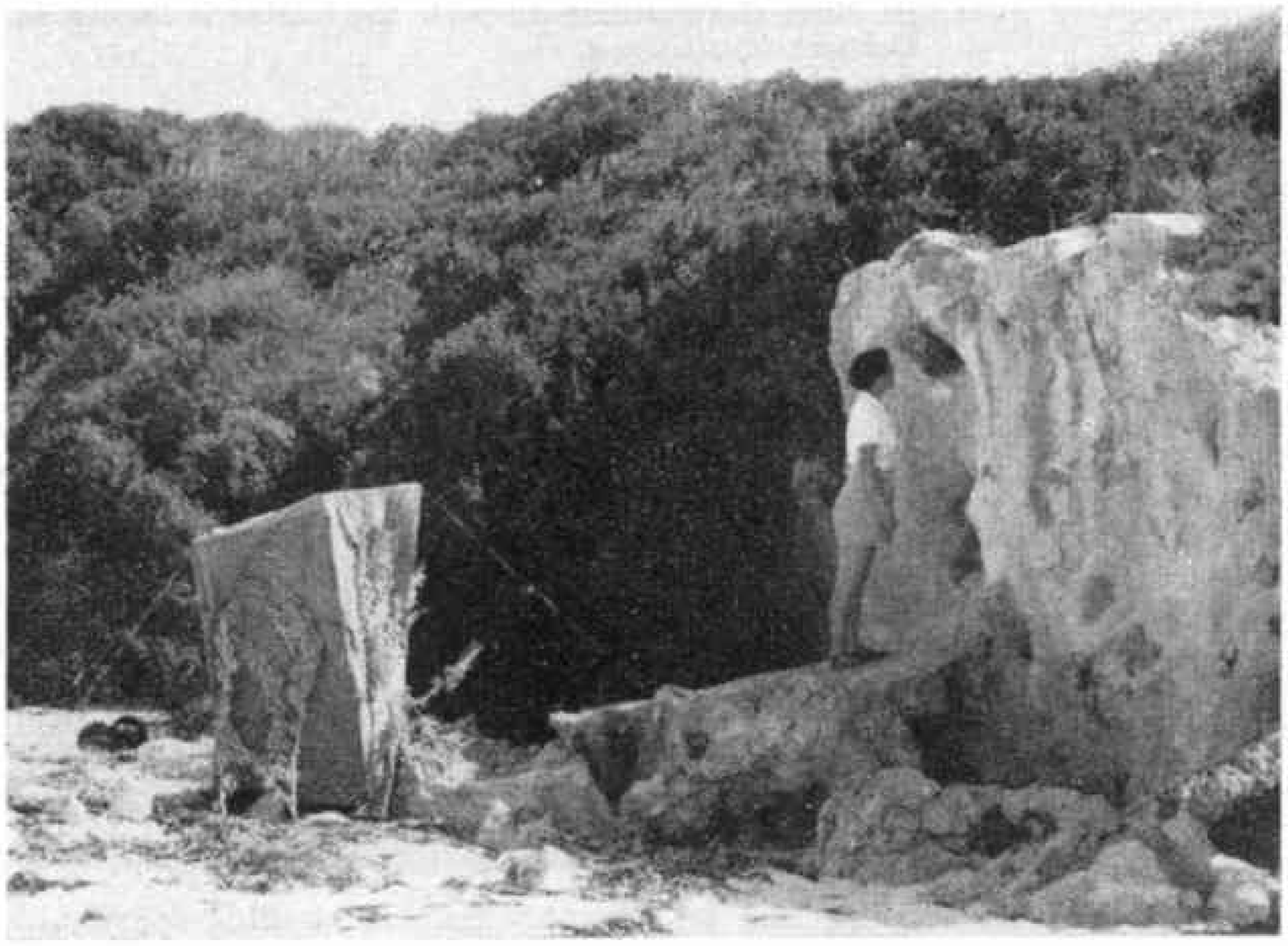
movement of its slippery quarry. You can see the kestrels in Britain doing just the same thing as they hang in the sky, ready to pounce on any unwary mouse moving below.

At night the sky was busy with the fluttering forms of the petrels or Mother Carey's Chickens. These sea birds come ashore only during the breeding season, and then mainly after dark. They dig tunnels in the sand and make an underground nesting chamber within which they rear a single chick.

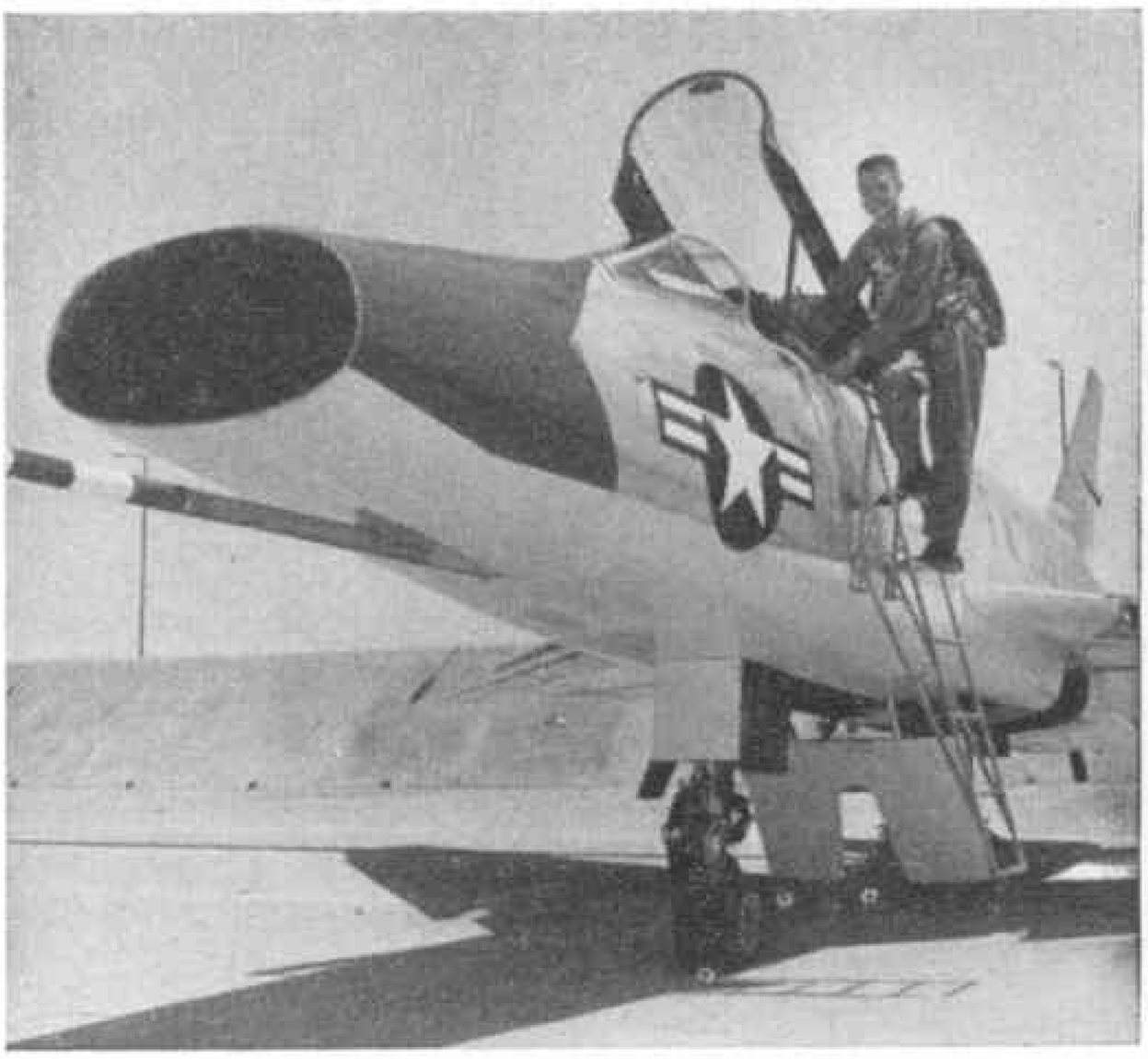
But birds are by no means the only things in which we take an interest. We have been able to see quite a lot of Australia's pouched animals like the kangaroo and 'possums as well. At an isolated tumble of huge rocks we recently watched a small colony of the beautiful rock wallaby and saw the animals sun-bathing of a summer's evening. Later a mother wallaby hopped down to browse on the grass. She had a young one in her pouch, and as she bent down to eat so the little one reached out too and nibbled away for himself. He did this until he got in the way of the old lady, who promptly gave him a whack with her paw and unceremoniously bundled him back into bed!

Lots of lizards and snakes are found in Australia, many of the snakes being very poisonous. The lizards include some odd-looking creatures and one of the commonest is a fat, stumpy chap known as the bobtail. Most lizards travel like quicksilver when frightened, but not this one! He is a slow and ungainly traveller, and when alarmed he suddenly opens his mouth and shoots out a wide ribbon of bright blue tongue in a threat display. This is all the more startling since the tongue contrasts strikingly with the bright pinks of the inside of the mouth, and as you will have seen in my picture on the previous page, the animal has an enormous gape. It is easy to imagine how such a display could unnerve a lizard-eating bird like the kestrel and make it leave bobtails severely alone. Like many other animals and some human beings, the bobtail has learnt the value of bluff; that's all the defence he has.

Just at present we are hot on the scent of one of the world's rarest animals—the numbat or banded ant eater. You won't see him in any zoo, but we're hoping to get pictures of him on his home ground.



Inspecting the kestrel's nest. On the left is the observation hide from which its photograph was taken.



Col. Horace A. Hanes, U.S.A.F., who has been awarded the Thompson Trophy for setting up the first official supersonic world speed record, as described below.

Air News

By John W. R. Taylor

Faster-Than-Sound Record

The famous Thompson Trophy has been awarded to Col. Horace A. Hanes of the U.S.A.F. for setting up the first official supersonic world speed record in a North American F-100C Super Sabre fighter, on 20th August last.

Entirely new timing equipment had to be devised to record the split second when the aircraft crossed the "tape" at each end of the 11 mile course, high above the Mojave Desert, California. It included an electronic clock able to measure time accurately to within 100,000th of a second, special cameras with 40 in. lenses and high-powered viewfinders. The film was double-exposed, so that the F-100C at 40,000 ft. and a cable stretched between two 50 ft. towers were both in focus at the same time.

Col. Hanes' two runs in opposite directions were made at 870.627 and 773.644 m.p.h., giving an average speed of 822.135 m.p.h. This exceeded the old record, made in an F-100A Super Sabre, by nearly 70 m.p.h.

New Fuel for Britannias

Shell have developed a new aviation turbine fuel which will not freeze even when the temperature drops to minus 50 degrees Centigrade. First aircraft to use it will be B.O.A.C.'s Britannia air liners when they enter service next Spring.

The new fuel will enable them to cruise for long distances at high altitudes, where the extreme cold might easily freeze normal aviation kerosene. It will also eliminate the need for weighty tank insulation or fuel heating arrangements previously needed.

Starting on Jets

The first pupil pilots in the Royal Air Force to be trained entirely on jet aircraft have begun their flying instruction at No. 2 Flying Training School, Hullavington, Wilts. They will do all their basic training on Hunting Percival Jet-Provosts, before passing on to Vampire advanced trainers.

Normally, pupils start their training on piston-engined Provosts; but, provided they do not prove too much of a handful for beginners, the Jet-Provosts offer several advantages. Pupils would not have to "unlearn" piston-engine techniques when passing on to the second stage of their training on Vampires. In fact the Jet-Provost even has a similar cockpit layout to the Vampire.

Alpine Car Lift

A new long-range vehicle ferry for winter sports enthusiasts is being started this month by Silver City Airways. It will operate on the 400 mile route from Ferryfield Airport, Kent, to Basle on the Franco-Swiss border three times a week from 16th December to 31st March, 1956.

Heated Bristol Superfreighter ferryplanes, each carrying up to three motor cars and 15 passengers, will be used on the service, which will save a day or more of tedious driving across France. Flying time will be two hours 40 minutes.

Test Flights Cut

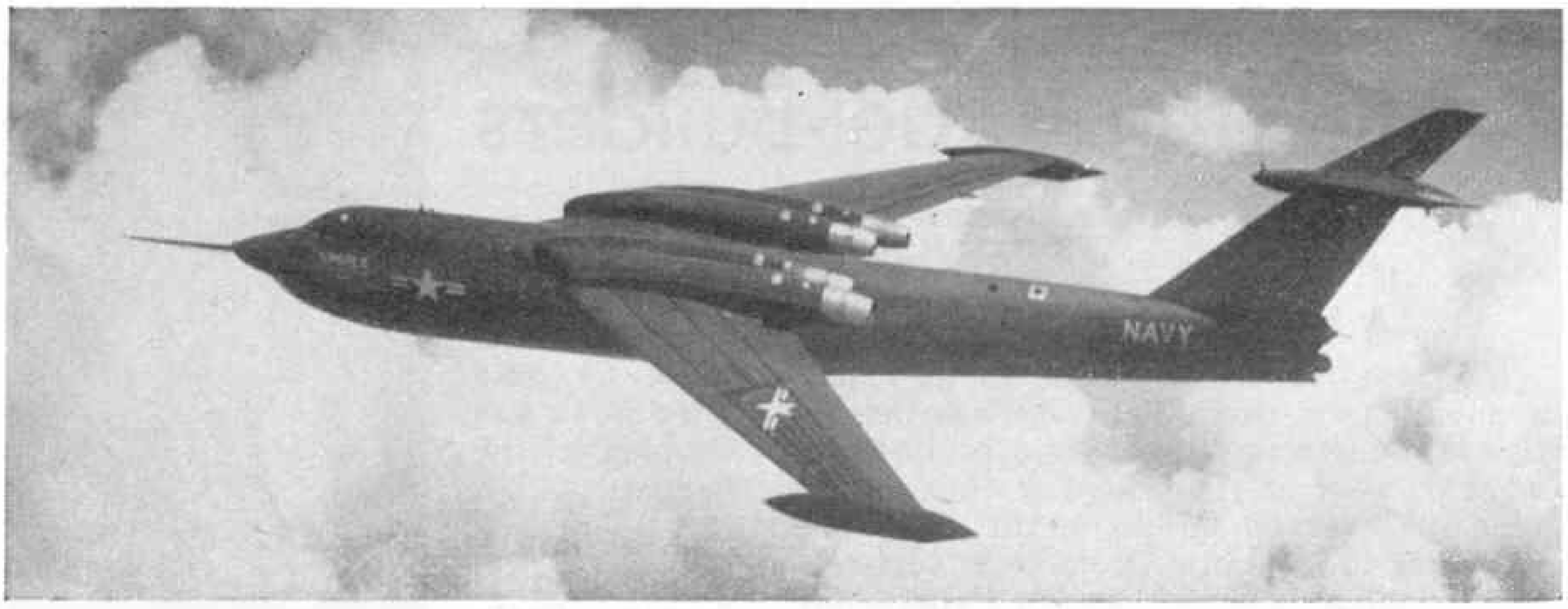
Soon after Lockheed announced that they had produced their 7,000th jet plane—a T-33 Shooting Star trainer—the U.S.A.F. said that in future only one out of every four T-33s built would have to be flight tested by U.S.A.F. pilots.

The T-33 is the first peacetime-produced U.S. military aircraft ever approved for service without an acceptance test flight of every new machine by military pilots. Tax-payers will benefit, because acceptance tests cost an average of £200 per aircraft.

Two Lufthansas

East Germany's new airline made its first official flight from Berlin to Moscow on 16th September. Equipped with Ilyushin Il-14 twin-engined air liners, which are in the same class as a Convair-Liner, it has its headquarters at Schoenefeld Airport, Berlin. Like its West German counterpart, the airline is known as Deutsche Lufthansa.

Lockheed T-33 Shooting Star jet advanced trainers awaiting delivery.



Martin XP6M-1 Seamaster turbojet flying boat making a test flight.

A 600 m.p.h. Flying Boat Tested

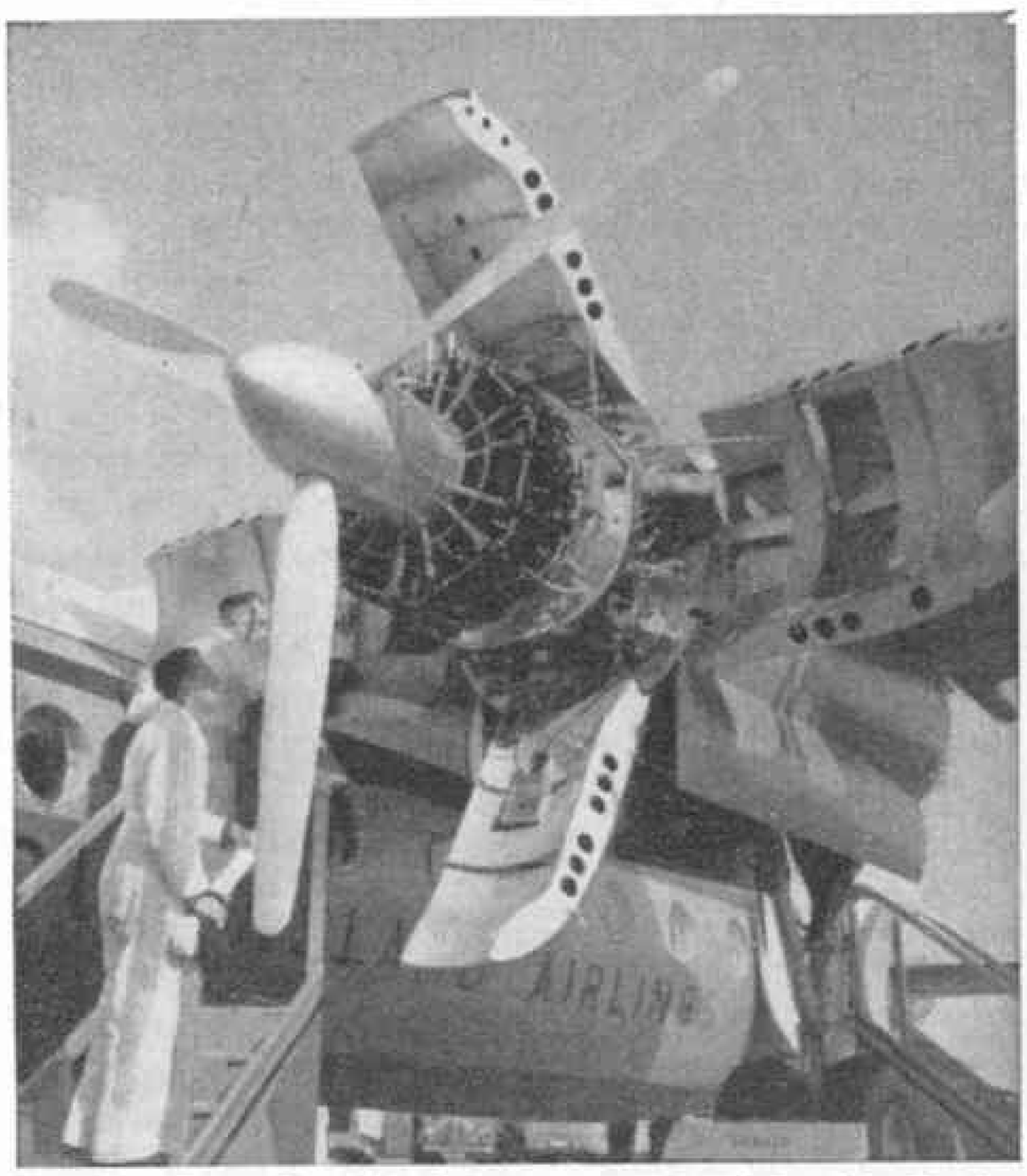
The U.S. Navy claim that flight tests of the Martin XP6M-1 Seamaster flying boat, illustrated above, have proved "unusually promising". It remained airborne for 1 hr. 40 min. on its first test flight, on 14th July, and logged a further 24 hours in the next two months.

Designed mainly for mine-laying and photo-reconnaissance duties, the Seamaster is powered by four 10,000 lb. thrust Allison J71 turbojets, which should give it a speed of over 600 m.p.h. at 40,000 ft. It has a wing span of 100 ft., is 134 ft. long and can carry a 30,000 lb. payload.

Glider Speed Records

Britain's gliding enthusiasts have been putting up some fine performances this year. On 7th August Bernard Thomas flew more than 185 miles from Camphill to Ferryfield, setting up a U.K. speed record of 42 18 m.p.h. over both the 200 and 300 km. distances. The previous record was 31 m.p.h.

Just over a month later, on 17th September, the U.K. two-seat glider speed record over 100 km. was broken by Wally Kahn and Bruce Sinclair, who covered the 64 miles from Lasham to the R.A.F. Station at West Malling at a speed of 40 m.p.h. Their landing added an unexpected spice of variety to the station's Battle of Britain Day display.



Handley Page Herald of the type ordered for Air Kruise, showing the "petal" engine cowling open. A Shell photograph.

High-Speed Air Liner

During a recent test flight the twin-Avon powered SE-210 Caravelle was dived at a speed of 652 m.p.h., whilst flying with a full load. In its first two months, this promising French jet-liner made 37 flights, totalling 53¾ hrs. flying time. A second prototype is due to fly early next year.

3,400 Mile Helicopter Flight

Two Westland Whirlwind helicopters arrived at Doha, capital of the Persion Gulf Sheikhdom of Qatar, on 28th September, after flying 3,400 miles from Eastleigh Airport, Southampton, in eight days. They were accompanied by a Dakota carrying spares, and were fitted with long-range fuel tanks.

The Whirlwinds are being used by the Shell Petroleum Company to fly men and materials from the mainland near Doha to off-shore drilling rigs, which are often inaccessible by boat in bad weather. They are equipped to carry nine passengers in addition to the pilot, and can be fitted with inflatable flotation gear to permit landings on the sea.

Largest Airline Order

Eastern Airlines, run by America's 1914-18 War fighter ace Eddie Rickenbacker, have ordered 40 turboprop-powered Lockheed Electra air liners, with an option on 30 more. Valued, with spares, at £36 million, it was, at the time, the largest single air liner contract ever placed, and follows an earlier order from American Airlines for 35 Electras.

Despite its size, it represents only part of Eastern Airlines' expansion scheme, which will cost them £125 million over the next five years. First step will be an increase in their Super Constellation and DC-7B fleets; followed by the introduction of the 412 m.p.h., 66-91 seat Electras. Finally, in 1959-61, Eastern plan to buy a £45 million fleet of 550-600 m.p.h. Boeing 707 or Douglas DC-8 jet-liners.

Heralds for Air Kruise

Much smaller, but no less interesting is an order from Air Kruise Ltd. for six Handley Page Heralds, which will be used on coach-air-rail services from London to Paris and Brussels.

At present, Air Kruise passengers to Paris travel by road or rail to Ferryfield, are flown across the Channel aboard Dakotas or Freighters in 20 min., and complete their journey by fast express train.

Among the Model-Builders

By "Spanner"

A real Meccano boy! Tommie Hine, Palmerston North, New Zealand, dressed in the novel costume he wore at a school fancy dress party.

A Meccano Fancy Dress

Meccano has formed the theme for many a novel fancy dress idea and has helped many youngsters to solve the problem of what to wear at the school or club party. One of the latest efforts in this direction has come to my notice from New Zealand, where young Tommie Hine of Palmerston North recently attended a fancy dress school party dressed as a Meccano boy. He is shown in his "costume" in the upper illustration on this page, and I think that readers will agree that in spite of its simplicity the "get up" is quite effective.

How to Use Meccano Parts—Sleeve Piece

The arrangement shown in Fig. 1 illustrates two important uses of the Sleeve Piece, Part No. 163. One of the more obvious uses of this part is as a chimney in small models of steam engines, etc., but it is also useful in making small cylinders and in assembling winding barrels for model cranes. The illustration shows one Sleeve Piece used as the cylinder of a miniature steam engine assembly, and another employed as a winding barrel for a hoisting Cord.

For the cylinder two Chimney Adaptors, Part No. 164, are pressed into the ends of a Sleeve Piece that is bolted to a suitable frame. The winding barrel is made by pressing a ¾" Flanged Wheel over each end of a Sleeve Piece. The Flanged Wheels enable the barrel to be fixed on the winding shaft and their flanges serve to prevent the Cord from slipping off the barrel.

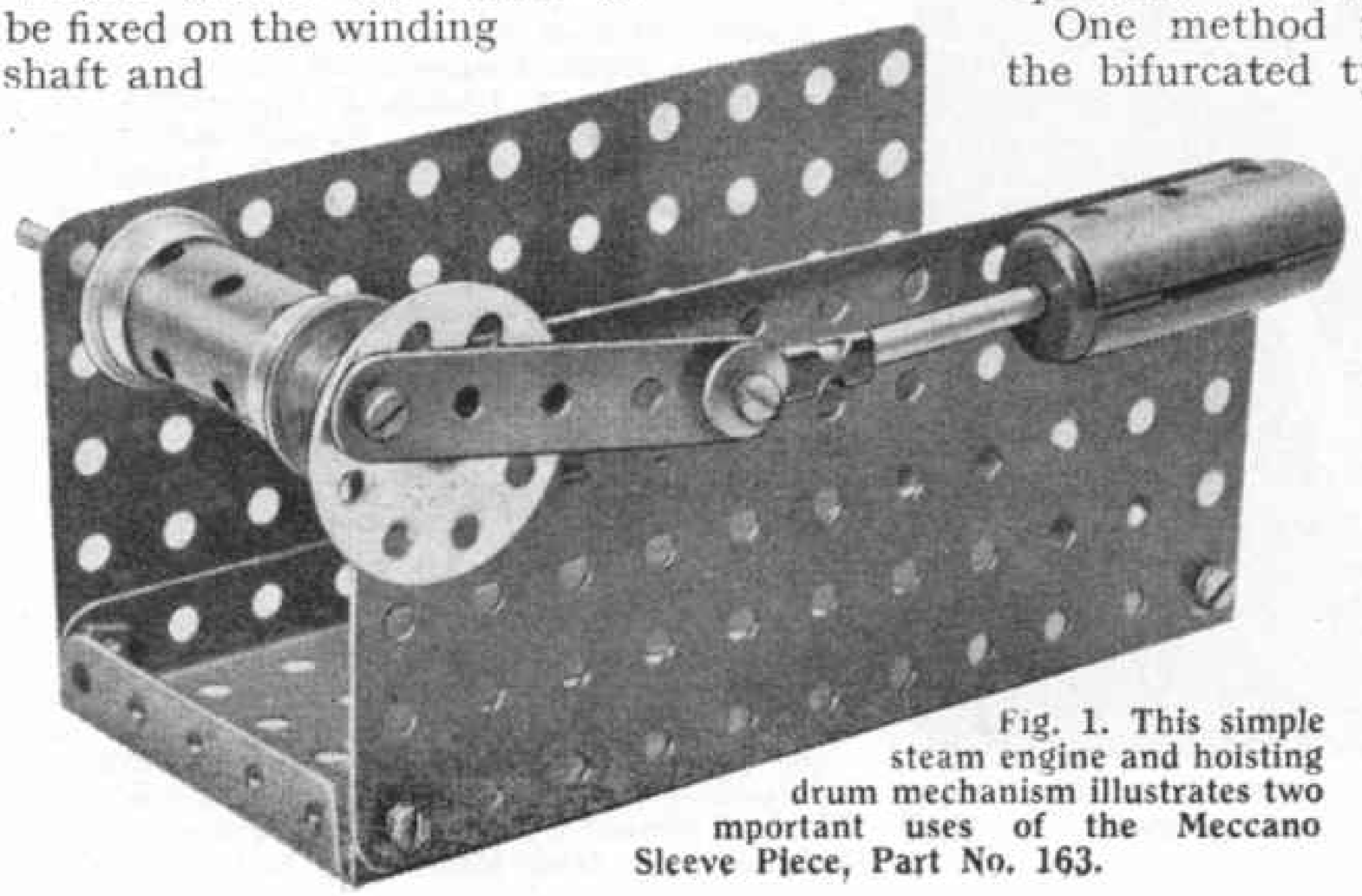


Fig. 1. This simple steam engine and hoisting drum mechanism illustrates two important uses of the Meccano Sleeve Piece, Part No. 163.

Attaching Parts to Sprocket Chain

One of the questions that crops up very frequently in my correspondence relates to the problem of attaching Strips or other parts to Meccano Sprocket Chain. It is not practicable to pass a Meccano bolt through a link in the Chain, and even if this arrangement could be adopted the bolt would prevent the Chain from passing round Sprocket Wheels. Very often however, it is desirable to use parts attached to Sprocket Chain in the assembly of conveyor belts or creeper tracks without interfering in any way with the movement of the Chain round Sprocket Wheels.

One method is to use paper clips of the bifurcated type. Each clip is passed through the part it is desired to attach and through a link in the Chain. The prongs are then opened out, leaving a gap in the centre that allows the Chain to pass freely over a Sprocket Wheel. This arrangement is quite effective, especially in the assembly of creeper tracks, but it may not be suitable for conveyors carrying heavy loads. Fig. 2 shows another way of achieving the

same result by making use of the slotted holes in Angle Brackets or Fishplates. In the illustration the Chain is shown fitted with Angle Brackets, but Fishplates can be used with equal success if they are more convenient.

The arrangement is very simple and consists of doubling two links of the Chain so that they can be pushed through the slotted hole. A short piece of stiff wire is then passed through the doubled links, above the part to be held in place, and the ends of the wire are twisted so that it cannot slip out of place. The Fishplate or Angle Bracket will be found to be held in position securely, yet the Chain will pass freely over the Sprocket Wheels that support it and transmit the drive.

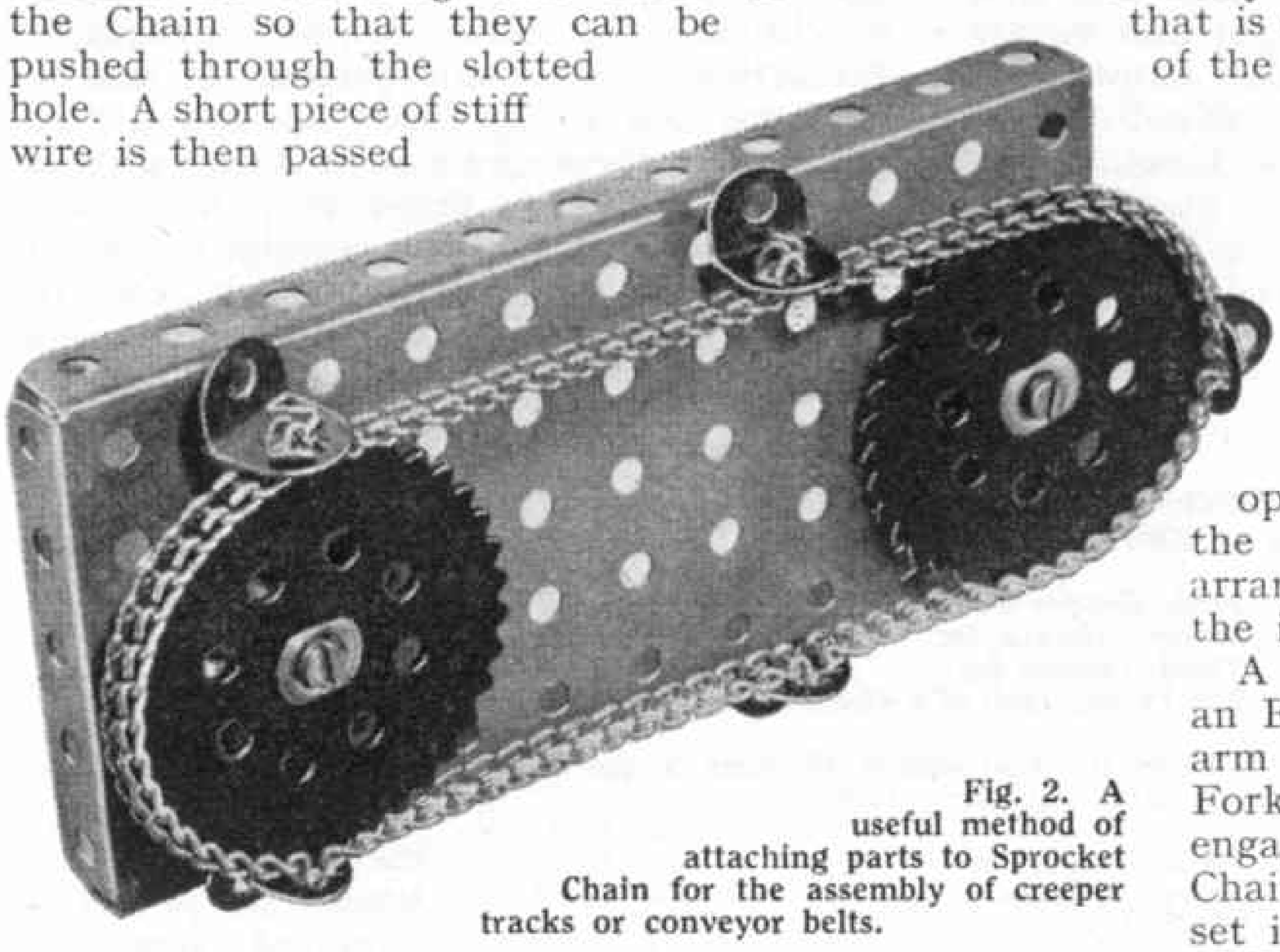


Fig. 2. A useful method of attaching parts to Sprocket Chain for the assembly of creeper tracks or conveyor belts.

A Novel Intermittent Motion Device

The ingenious mechanism shown in Fig. 3 is intended mainly to operate as an intermittent feed arrangement, on the lines of the mechanisms required to draw a film through the gate of a projector. There are several ways in which this movement can be obtained, but the device illustrated is particularly interesting in view of the unusual method employed. In spite of the novel arrangement the mechanism is reliable and operates very smoothly, and no doubt model-builders will be able to find many applications for it in models that require an intermittent feed device.

Two 57-tooth Gears are fixed on Rods mounted parallel to each other so that the Gears are in constant mesh. One of these Rods is used as the driving shaft of the machine. An arm 1, made from a 4" Stepped Curved Strip and a 2½" Curved Strip overlapped three holes, is freely mounted on a Pivot Bolt that is fixed by two nuts in one of the Gears. The arm is spaced from the Gear by a Collar.

The arm 1 is free to slide in a Slide Piece 2 that is pivotally mounted on a ⅜" Bolt passed through the second 57-tooth Gear. To ensure smooth operation of the mechanism the two Gears should be arranged exactly as shown in the illustration.

A Centre Fork 3 is held in an End Bearing bolted to the arm 1 as shown. The Centre Fork forms a claw that engages a length of Sprocket Chain when the mechanism is set in motion.

When the 57-tooth Gears are rotated they impart an unusual combined reciprocating and circular movement to the Centre Fork 3. On its driving stroke the Centre Fork engages the Sprocket Chain and travels in a straight line until the stroke is completed, drawing the Chain with it. The Centre Fork is then raised clear of the Chain, and travels backward until it again descends and engages the Chain for another stroke.

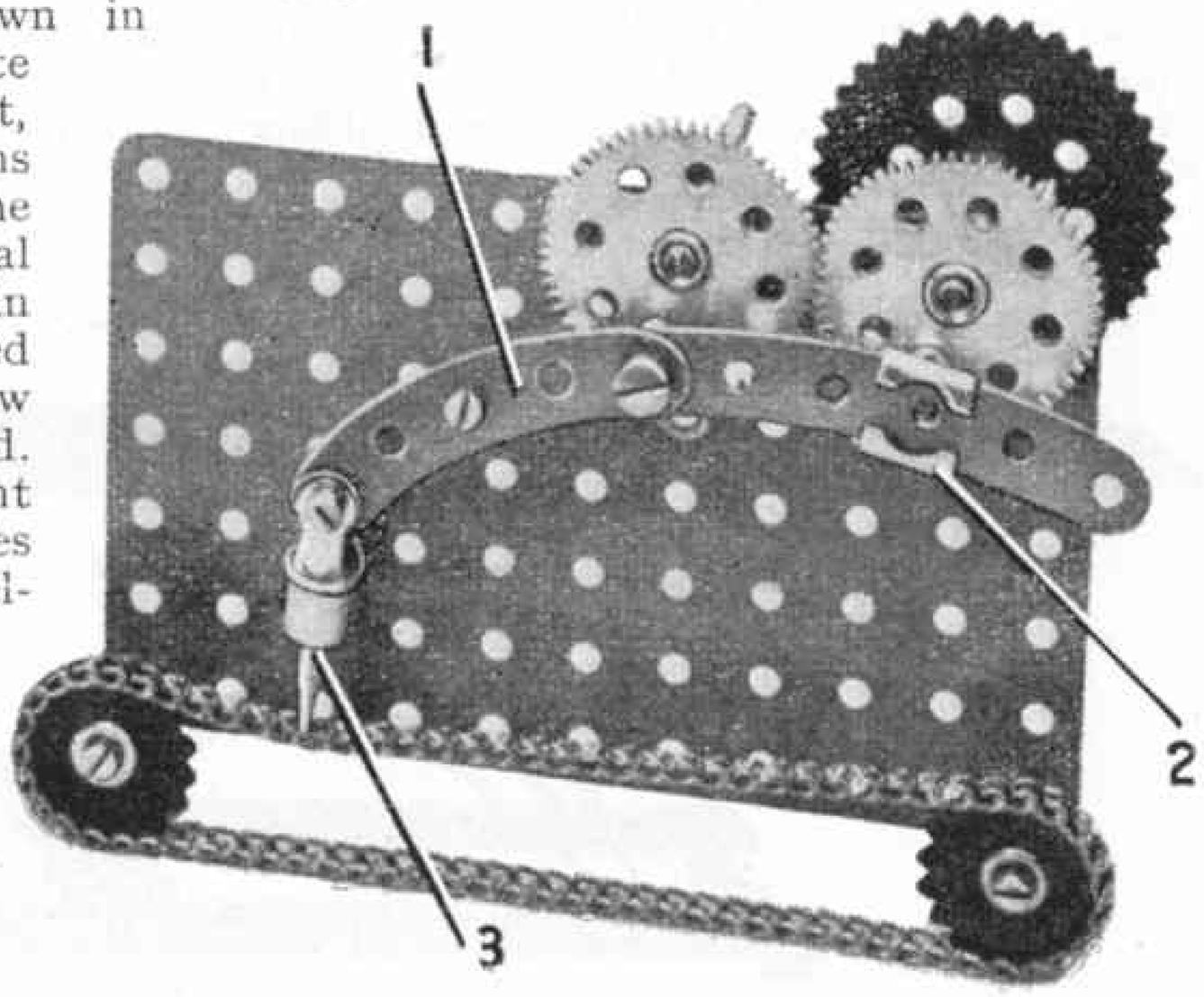


Fig. 3. The novel intermittent feed mechanism described on this page.

The LoadaVeyor Competition

Fine Cash Prizes for Model-Builders

LAST month we announced the first details of a special Competition we are organising during the winter months, in which fine Cash Prizes are offered for the best Meccano models of The LoadaVeyor, a sturdy light mobile conveyor, manufactured by Messrs. J. Collis and Sons Ltd., London. Full details of these Prizes are given in the panel on this page.

The LoadaVeyor, which forms the subject of the Competition is shown in the accompanying illustrations, and for the benefit of those who did not see the original announcement in the November *M.M.* we are repeating the full details of the Competition here. As the Contest will remain open until 29th February, 1956, there is still plenty of time to prepare and send in entries, and we hope that all those model-builders who have not yet started on their entries, will set to work without further delay. The Competition is open to readers of all ages in all parts of the world and there is no limitation on the size of Outfit or quantity of parts that they may use in building their models.

THE PRIZES

SECTION A. (Competitors under 15 years of age on 29th February, 1956):

	£	s.	d.
First, Cheque for	10	0	0
Second, Cheque for	6	0	0
Third, Cheque for	4	0	0
Ten Prizes, each of a Cheque for	2	0	0

SECTION B. (Competitors 15 years of age or over on 29th February, 1956):

	£	s.	d.
First, Cheque for	15	0	0
Second, Cheque for	8	0	0
Third, Cheque for	5	0	0
Ten Prizes, each of a Cheque for	3	0	0

CLOSING DATE FOR ENTRIES—
29th FEBRUARY, 1956

Details of The LoadaVeyor

The LoadaVeyor is a light sturdy mobile load conveyor, which can be wheeled quickly into the position where it is required for action by only one person. It can be used for conveying goods horizontally or will deliver them upwards or downwards as required, and when fitted with the correct type of conveyor belt it is suitable for use in a very wide range of industries. One of the accompanying illustrations shows The LoadaVeyor at work at a warehouse loading sacks into a waiting motor lorry.

The LoadaVeyor consists of a continuous motor-driven belt, running on rollers mounted in a light but sturdy metal boom. The boom is pivotally mounted near its heavier end, which carries the driving motor, on a light tubular steel cradle, which in turn is pivoted on a wheeled chassis. Owing to the pivotal arrangement of the cradle, the boom can be raised or lowered in the horizontal position or inclined to any required angle within minimum and maximum limits. Adjustment of the cradle, and therefore the heavy end of the boom, to the required position, is carried out by means of a small Collis Hydraulic Unit fixed to the chassis, the ram of this being connected directly to the cradle. When the cradle is in the desired position the boom is adjusted to the required inclination by

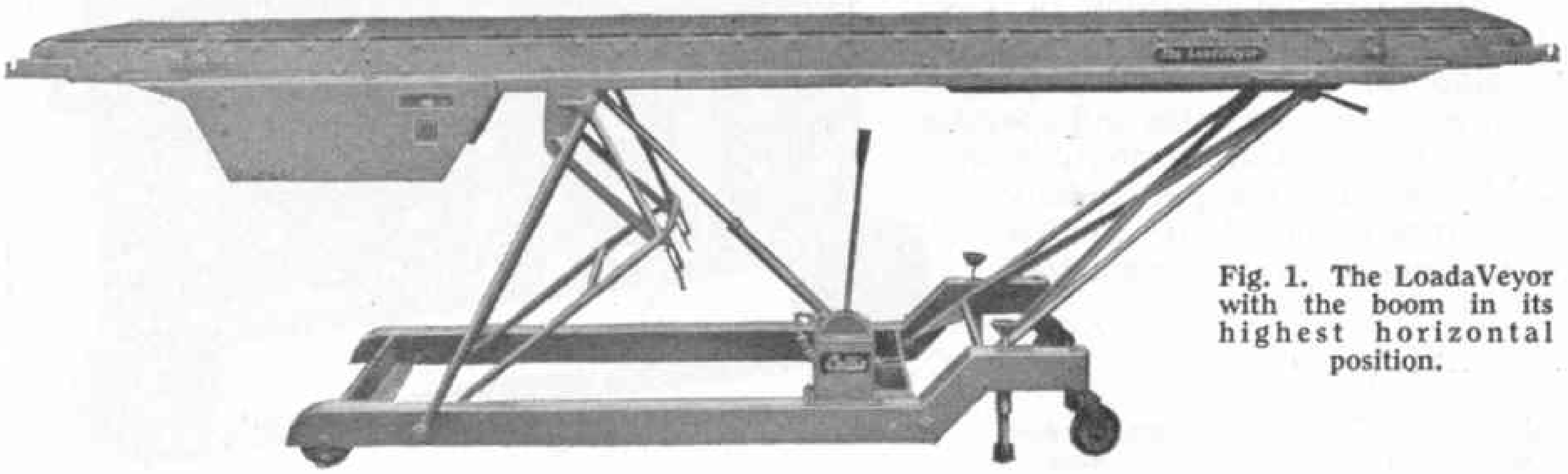


Fig. 1. The LoadaVeyor with the boom in its highest horizontal position.

Fig. 2. The LoadaVeyor in action loading filled sacks from a warehouse into a motor lorry. Notice the upstands fixed across the belt to prevent the sacks slipping.

hand, and this operation is made quite easy by the provision of powerful counterbalance springs fixed to the underside of the boom and the cradle as shown in Fig. 1.

The Collis Hydraulic Unit is controlled from the lever seen at one side of The LoadaVeyor in Figs. 1 and 3. A lever operating a screw clamp that works in a channel on the underside of the boom is provided for fixing the boom in the required position. *Model-builders will not be able to reproduce the hydraulic mechanism in Meccano, and they are free therefore to substitute screw, lever or any other kind of mechanism they can devise that will answer the purpose.* They are also free to use cloth, stout paper or other material for making the conveyor belt.

The motor that drives the belt is mounted inside a casing at one end of the boom. The motor transmits its drive by sprockets and chain to the belt driving drum. The latter is mounted so that it can slide up and down to facilitate tensioning of the belt and movement of the drum is effected by a simple screw and lock-nut.

The chassis runs on rubber-tyred castors at the front and rubber-tyred ball-bearing wheels at the rear, and is fitted with screw-down sprags for levelling on uneven floors.

Careful study of the accompanying illustrations and those in the November *M.M.* will reveal the main constructional details of the boom and cradle.

The LoadaVeyor can be supplied with different types of conveyor belts designed to suit the particular goods that have to be handled. A flat fabric belt is suitable for handling cartons, bags and other small items, and if required hard rubber strips can be bolted across the belt at suitable distances apart to prevent goods slipping when the boom is working at a steep angle. For other types of goods endless roller chains, on which are mounted wood or steel slats, can be provided.

How to Send in Your Entry

The actual model must not be sent. Good photographs or neat clear sketches will do. Each photograph or drawing must bear the sender's name and address and the age he will be on 29th February, 1956.

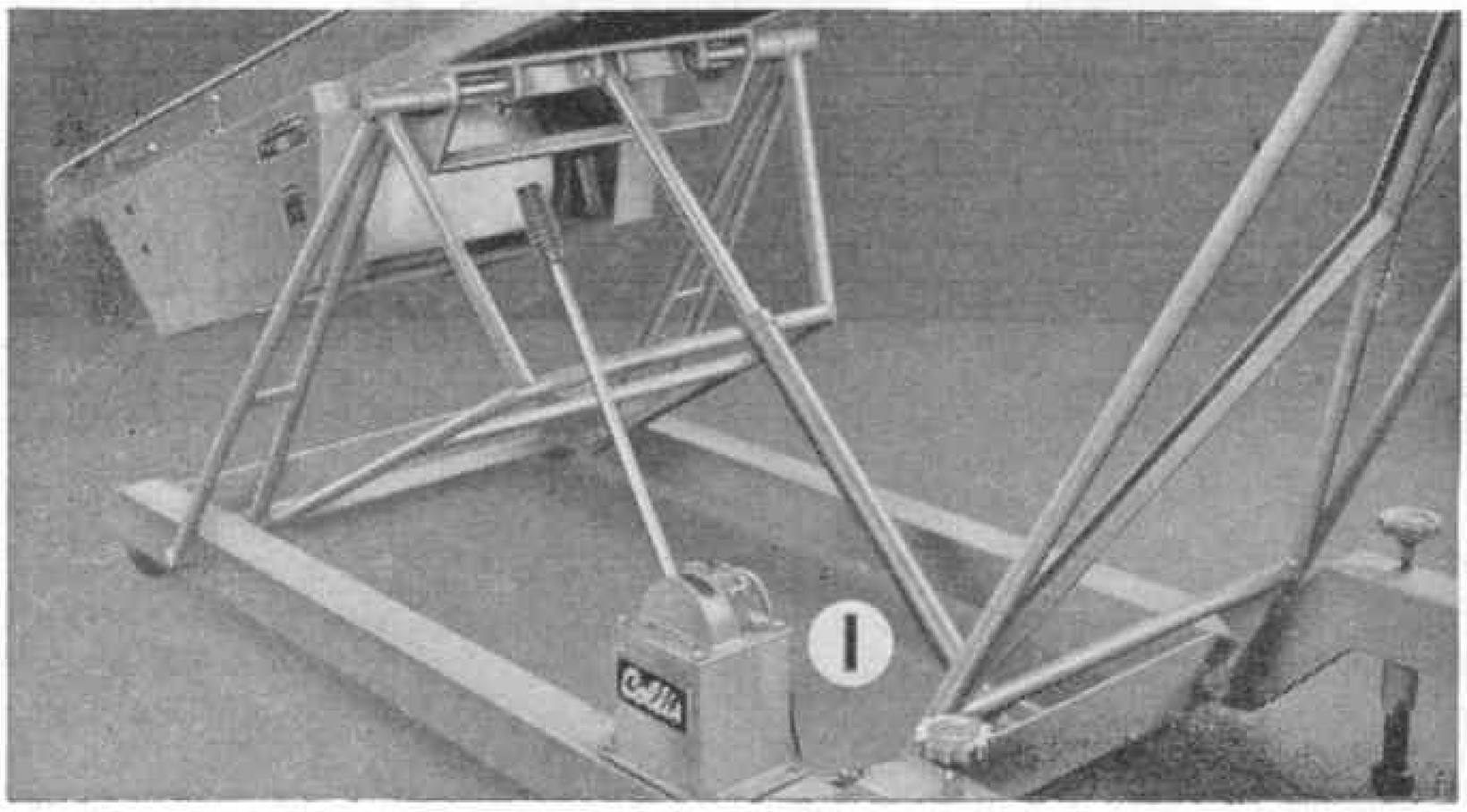


Fig. 3. The cradle on which The LoadaVeyor boom is pivoted is raised by the Collis Hydraulic Unit, the lever of which is seen on the near side at the centre of the picture.

New Meccano Model

A Meccano Plaiting Machine

THE attractive model we are describing this month is designed specially for experienced model-builders having a fairly wide range of parts at their disposal. But although it incorporates a variety of ingenious mechanisms, it is not really a difficult model to construct or operate.

Most of us at some time or other have tried our hands at plaiting three strands of string, and this machine is designed to carry out automatically and continuously all the movements involved in hand plaiting. Really it is a simple version of a braiding machine, and it is most interesting to watch in motion when completed. Essentially it consists of three carriers, each of which holds a reel of coloured thread. By means of cleverly thought out mechanism these carriers are manipulated in such a manner that threads drawn from the reels are interwoven in the usual plaited fashion, the plaited strand then being wound up automatically by a neat "take-up" device.

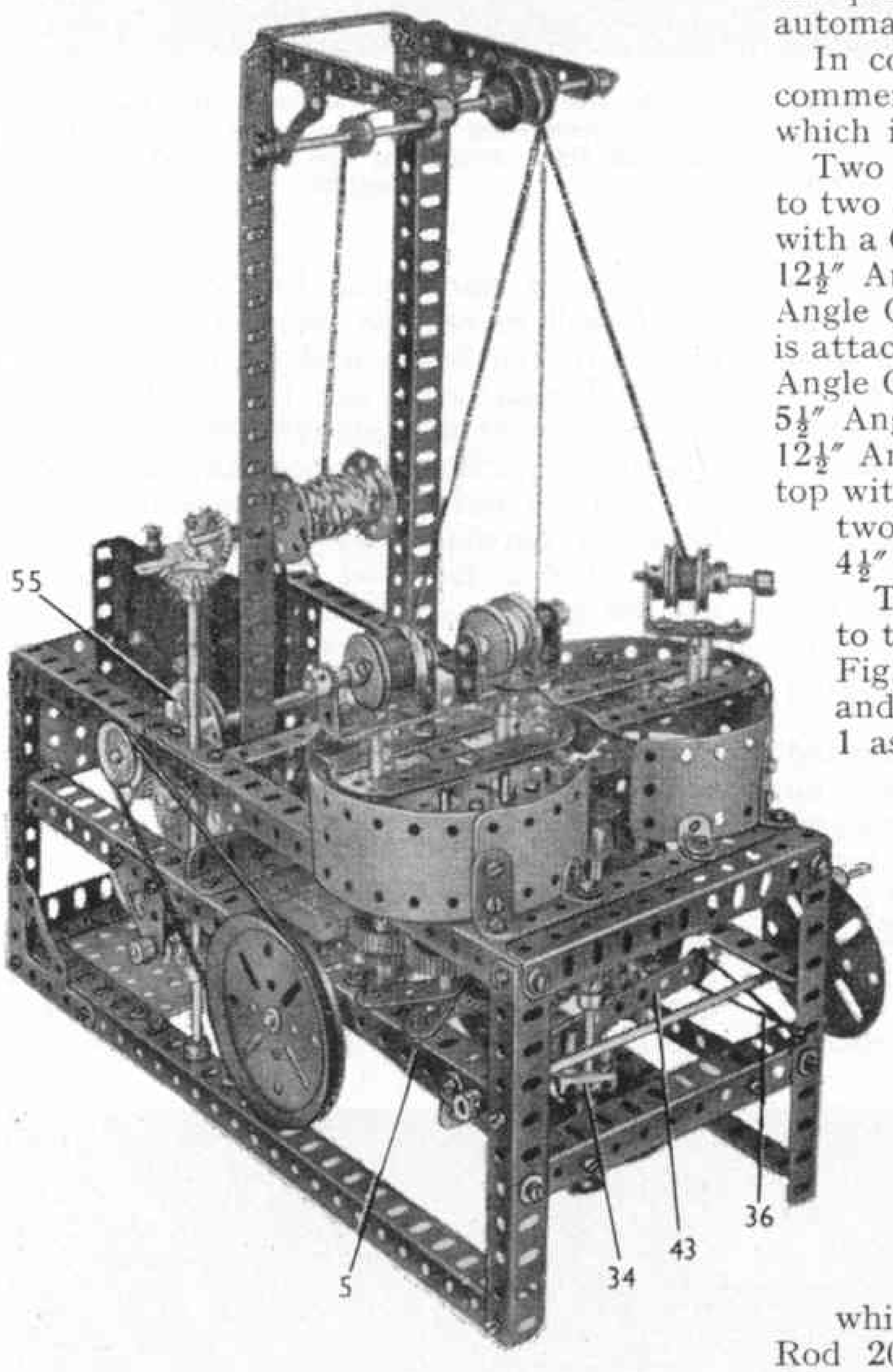


Fig. 1. This ingenious Plaiting Machine makes an unusual and interesting subject for experienced model-builders.

In constructing the model it is best to commence by building the main framework, which is seen in Figs. 1 and 2.

Two 12½" Angle Girders 1 and 2 are bolted to two 5½" Angle Girders 3 and 4, supported with a Corner Gusset at the rear. A further 12½" Angle Girder 5 is secured to the 5½" Angle Girders 3 and 4. This complete side is attached to another similar side with 5½" Angle Girders and two Flat Plates. To the 5½" Angle Girders 6 and 7 are bolted two 12½" Angle Girders 8 and 9, secured at the top with a 2½" × ½" Double Angle Strip and two Corner Gussets extended with a 4½" Strip.

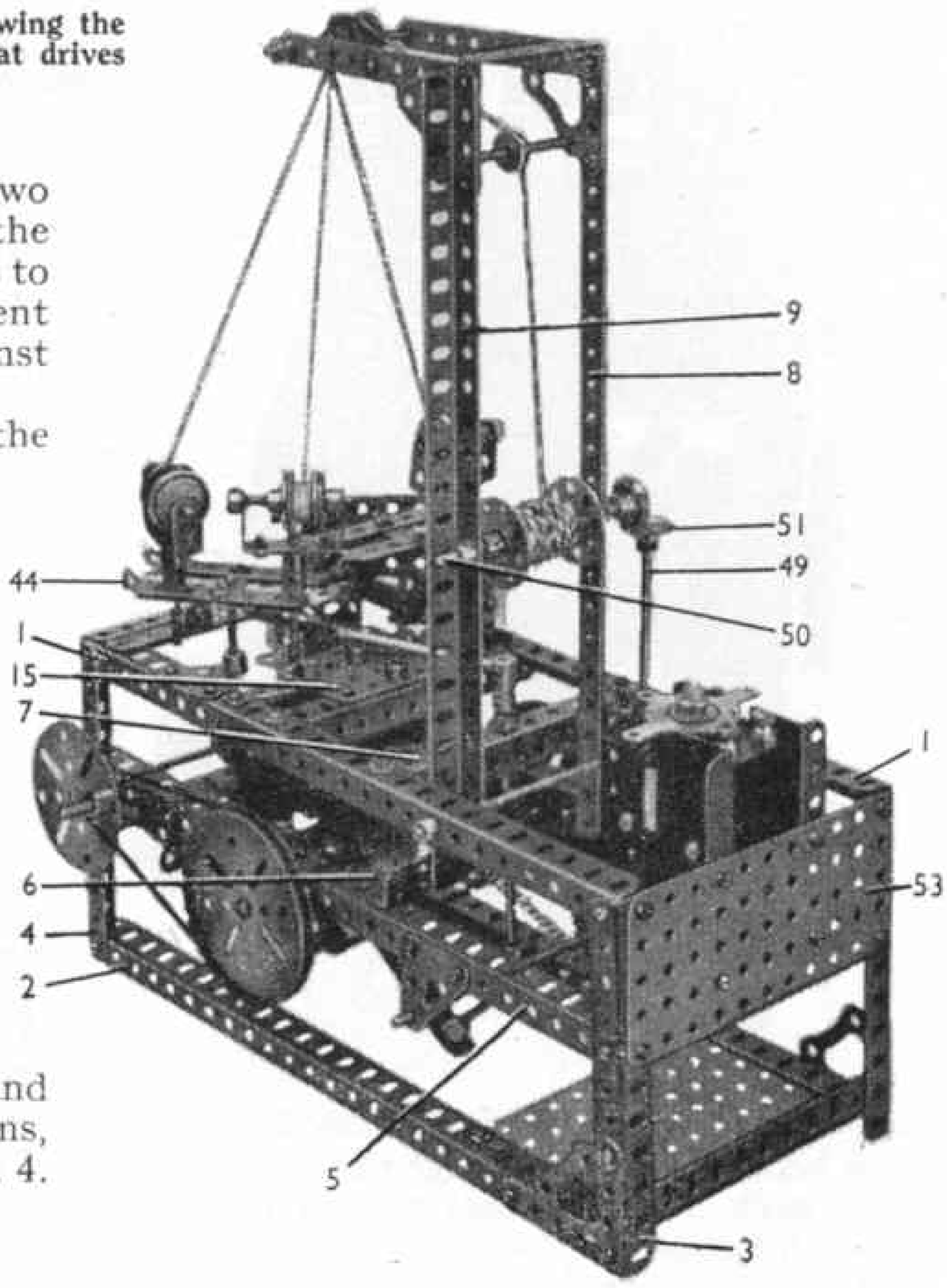
Two 5½" Strips 10 and 11 are bolted to the 12½" Angle Girders 5 as shown in Fig. 3, and two 5½" Angle Girders 12 and 13 are bolted to the Angle Girders 1 as shown in Fig. 4. A 2½" × 2½" Flat Plate 14, Fig. 3, is bolted to the strips 10 and 11, and one 2½" × 2½" Flat Plate 15, Fig. 2, to the 5½" Angle Girders 12 and 13.

On a 3" Rod 16, Fig. 4, is secured a Bush Wheel with two Set Screws bolted in adjacent holes. Collars are used to hold the Rod in position, and a 1½" Helical Gear Wheel 17 is fastened to its lower end.

On a 2½" Rod 18, Fig. 4, a Bush Wheel with Set Screws in each of its eight holes is secured, also a 50-tooth Gear Wheel 19, which drives a ¾" Pinion Wheel on a 2½" Rod 20. A 1" Gear Wheel on Rod 20 drives a 1" Gear Wheel on a 4½" Rod 21. The 1½" Strips 22 are placed so that the 1" Gear Wheels engage each other.

Rod 23, Fig. 4, is driven similarly to Rod 21, but ¾" Sprocket Wheels are used in place of the 1" Gear Wheels. At the lower ends of the Rods 21 and 23, Fig. 4, a Coupling fitted with two Threaded Pins is secured, Fig. 3. Two 5½" Strips 24 are bolted to

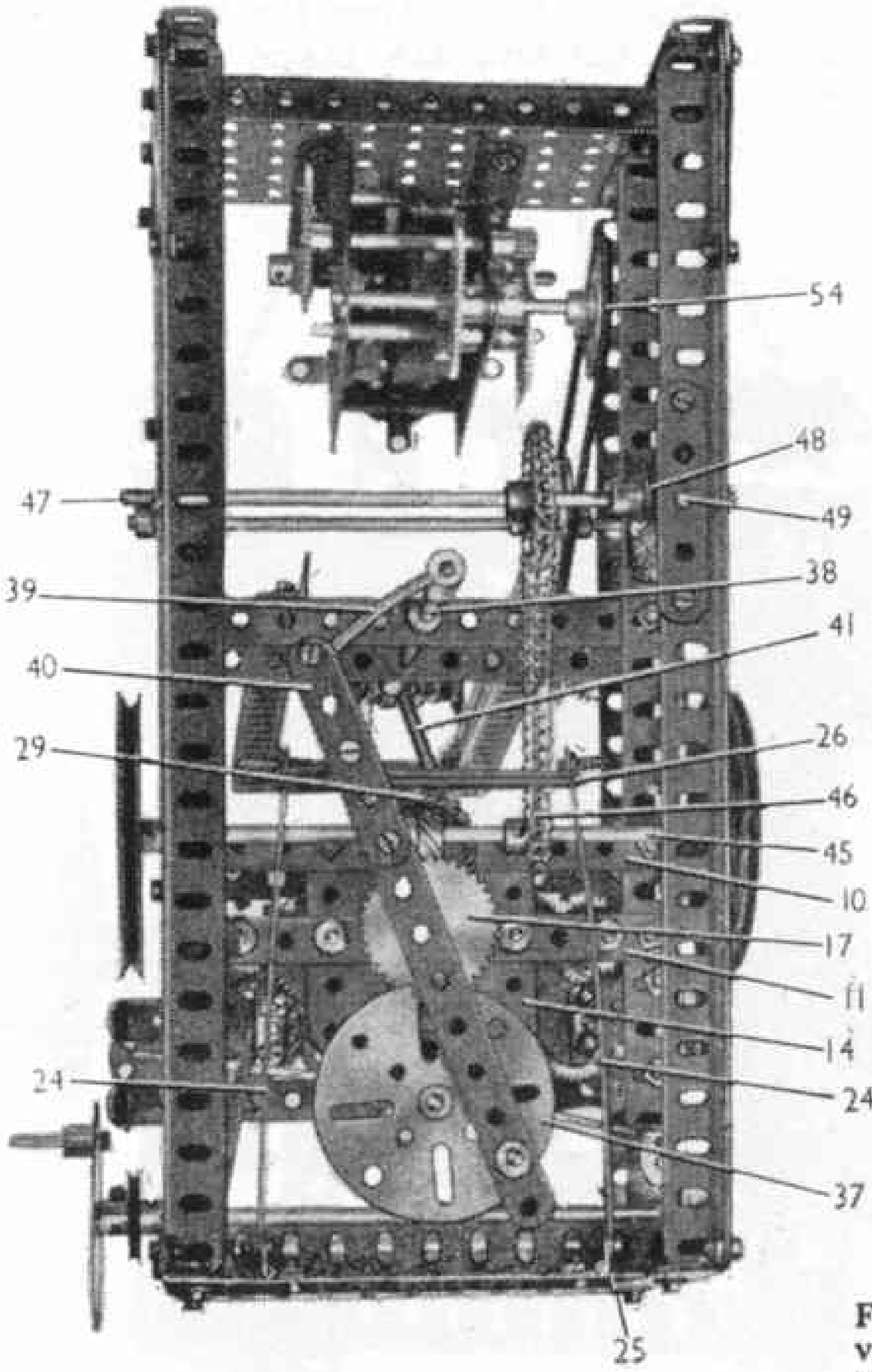
Fig. 2. A rear view of the Plaiting Machine, showing the method of mounting the E20R Electric Motor that drives the mechanism.



Hinges fixed to a 5½″ Angle Girder 25. Two 2½″ Driving Bands 26 are placed over the other ends of the Strips with two ½″ Bolts to hold them in position. By this arrangement the 5½″ Strips are made to press against the Threaded Pins.

Before securing the Couplings on the Rods 21 and 23, the centre Rod 16 must be rotated to drive the Bush Wheels and secured when the two Set Screws in the centre Bush Wheel strike the spaces in the two outer Bush Wheels. These must operate like gear wheels, turning the Rods 21 and 23 half a revolution. On a further two 2½″ Rods 27 and 28, Bush Wheels with Set Screws are secured, also 50-tooth Gear Wheels. On the lower Wheels with Set Screws are secured also 50-tooth Gear Wheels. On the lower ends of the Rods 1″ Sprocket Wheels are fastened and are connected with Chain 29, Fig. 3.

The 2½″ × 2½″ Flat Plates 15, Fig. 2, and 30, Fig. 4, are extended with Flat Trunnions, to form the bearings for 4½″ Rod 31, Fig. 4.



A ¾″ Pinion Wheel 32 is fixed to engage the 50-tooth Gear Wheel 33, Fig. 4. A 5½″ Strip 43 pivoted by a Hinge and secured to the 12½″ Angle Girders 5 with a Corner Angle Bracket, is held against Threaded Pins in a Coupling 34 by a 2½″ Driving Band 36, Fig. 1.

A Face Plate 37 is bolted to the lower end of Rod 31. In the centre of the 5½″ Angle Girders 6 and 7, Fig. 2, a 4½″ Rod 38 is placed, with a Coupling at each end. At the lower end a Flexible Coupling Unit 39 is attached to a compound 6½″ Strip 40 with a Collar and Set Screw, whilst the other end of the Strip is connected to the Face Plate with a Threaded Pin and a Collar.

A 5″ Rod 41 is fastened in the Coupling 42, Fig. 4. This is so adjusted that after each half turn of the Face Plate 37 the Rod 41 rests on Rods 21 and 23 alternately; the Strip 43, Fig. 5, pressing against the Threaded Pins after each movement, holds the Rod 41 stationary.

The carrier slides are built from four 3½″ Strips 44, spaced apart with a 1½″ Strip and a double Arm Crank. The ends of the Strips are bent as shown in Fig. 2. These

Fig. 3. The Plaiting Machine seen from underneath. This view shows clearly the ingenious drive to the shaft that controls the movement of the bobbins carrying the threads.

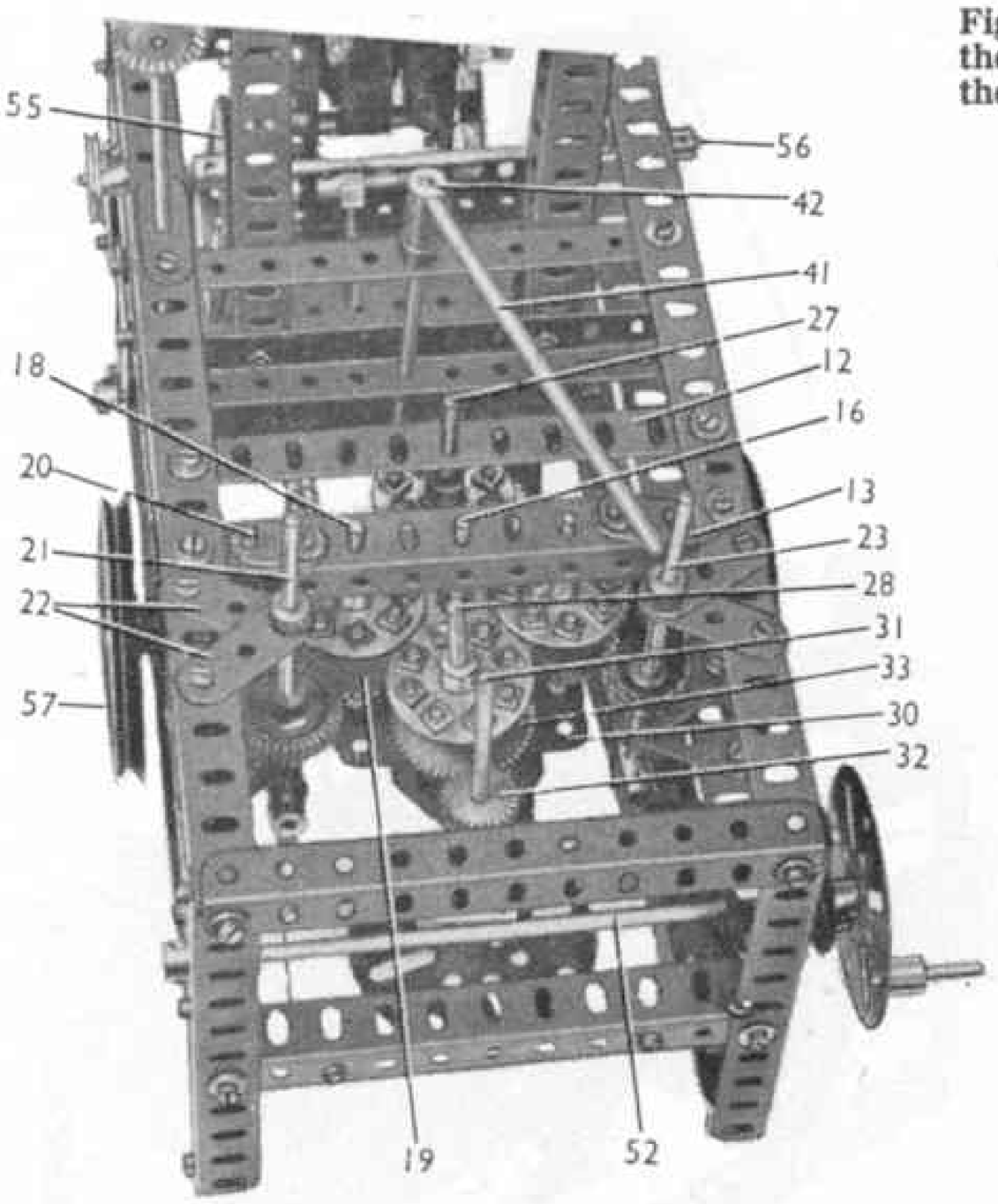


Fig. 4. A close-up of the novel intermittent drive used in the Machine. The plate forming the upper bearings for the shafts is removed to reveal the arrangement of the built-up gears.

are secured to the Rods 21 and 23, Fig. 4, care being taken to arrange the slots in line with each other so that the carriers can move from one to the other quite freely.

The carriers are built from a Bush Wheel mounted on a 2″ Rod. Two 1″ × 1″ Angle Brackets are bolted to a Double Arm Crank, which is secured to the top of the 2″ Rod. Two 1″ Pulley Wheels are fixed to a further 2″ Rod mounted in the Angle Brackets and a Compression Spring is placed between one of the Pulleys and its Angle Bracket to act as a Brake.

A 5½″ × 1½″ and a 2½″ × 1½″ Flexible Plate are bent to a circular shape and bolted to the framework. These keep the carriers in the carrier slides while they are in motion. A 3″ Formed Strip is bolted to the rear of the 5½″ × 1½″ Flexible Plates but must be clear of the Rod 41.

Two 1″ Corner Brackets are bolted to the 12½″ Angle Girders 5, Fig. 1, to form the bearing for Rod 45, Fig. 3. This Rod has a 3″ Pulley Wheel at each end and a ½″ Helical Gear Wheel at the centre. A ¾″ Sprocket Wheel 46 drives a 1½″ Sprocket Wheel on Rod 47, on which is secured also a Worm Wheel 48 that drives a ½″ Pinion on an 8″ Rod 49. A drum, built from a Sleeve Piece, a Socket Coupling, a Bush Wheel and a Wheel Disc, is mounted on a 4½″ Rod 50 driven by the ⅞″ Bevel Wheels 51, Fig. 2.

On a 6½″ Rod 52 is mounted a 1″ Pulley Wheel and a Face Plate for the hand drive. By turning the Face Plate the right hand carrier slide will rotate through half a revolution and Rod 41 will move over from right to left. Then the left hand carrier slide will rotate through half a revolution, and the Rod 41 will move from left to right to complete the cycle of operation.

An E2OR Electric Motor is bolted to the 5½″ × 2½″ Flat Plate 53, Fig. 2. The Motor sideplates are extended with 1½″ Corner Brackets. By the use of three ½″ Pinions and three 1½″ Gear Wheels a gear reduction ratio of 27-1 is provided from the motor shaft. A 1½″ Pulley Wheel 54, Fig. 3, drives another 1½″ Pulley Wheel 55, on Rod 56, Fig. 4. The 1″ Pulley Wheel on Rod 56 drives a 3″ Pulley Wheel 57.

Each carrier is now ready to be filled up with thread or cord. Then the three threads from the carriers are taken over the ¾″

(*Continued on page 692*)

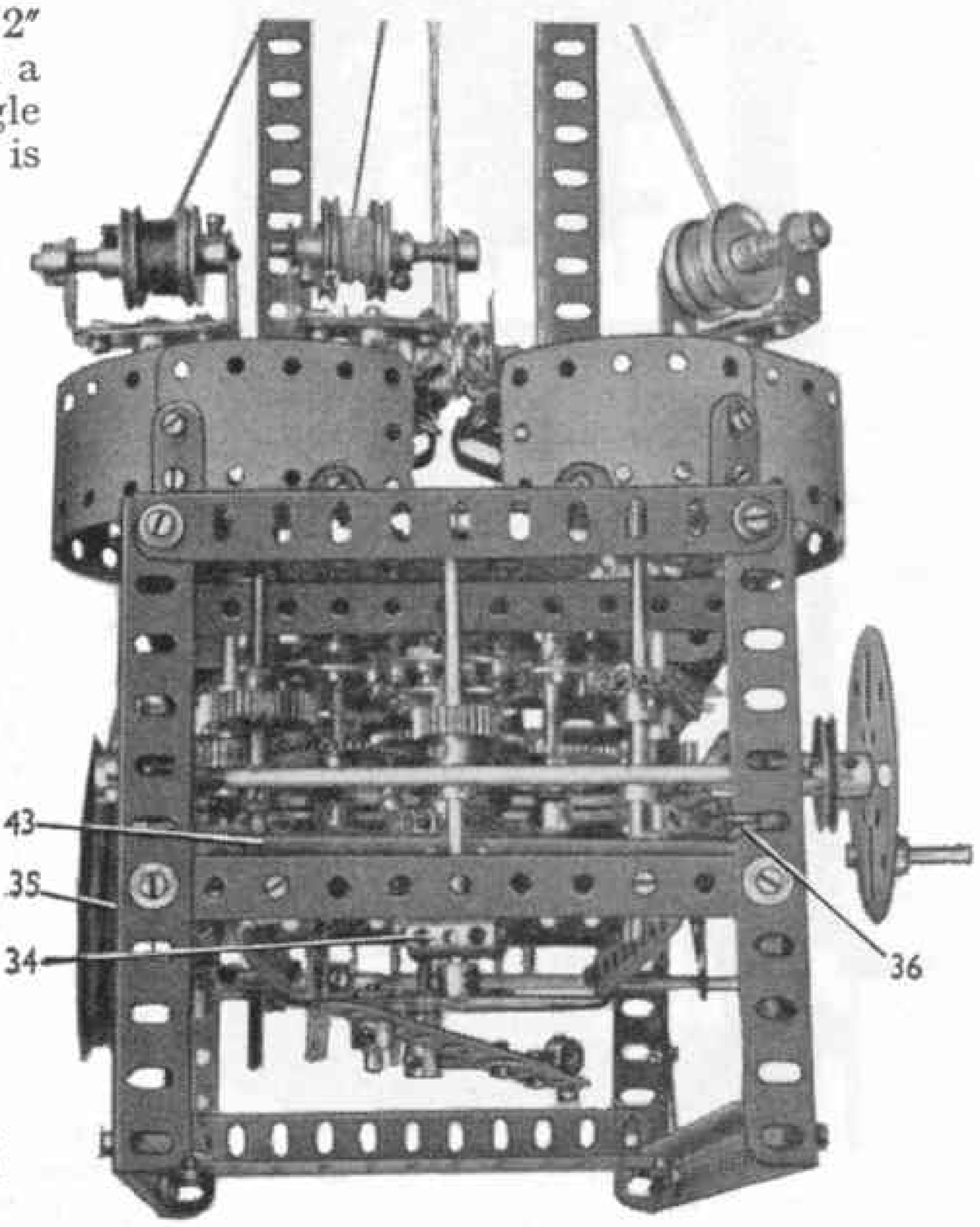


Fig. 5. This end view of the model shows the general layout of the gears that drive the bobbin carriers.

Club and Branch News

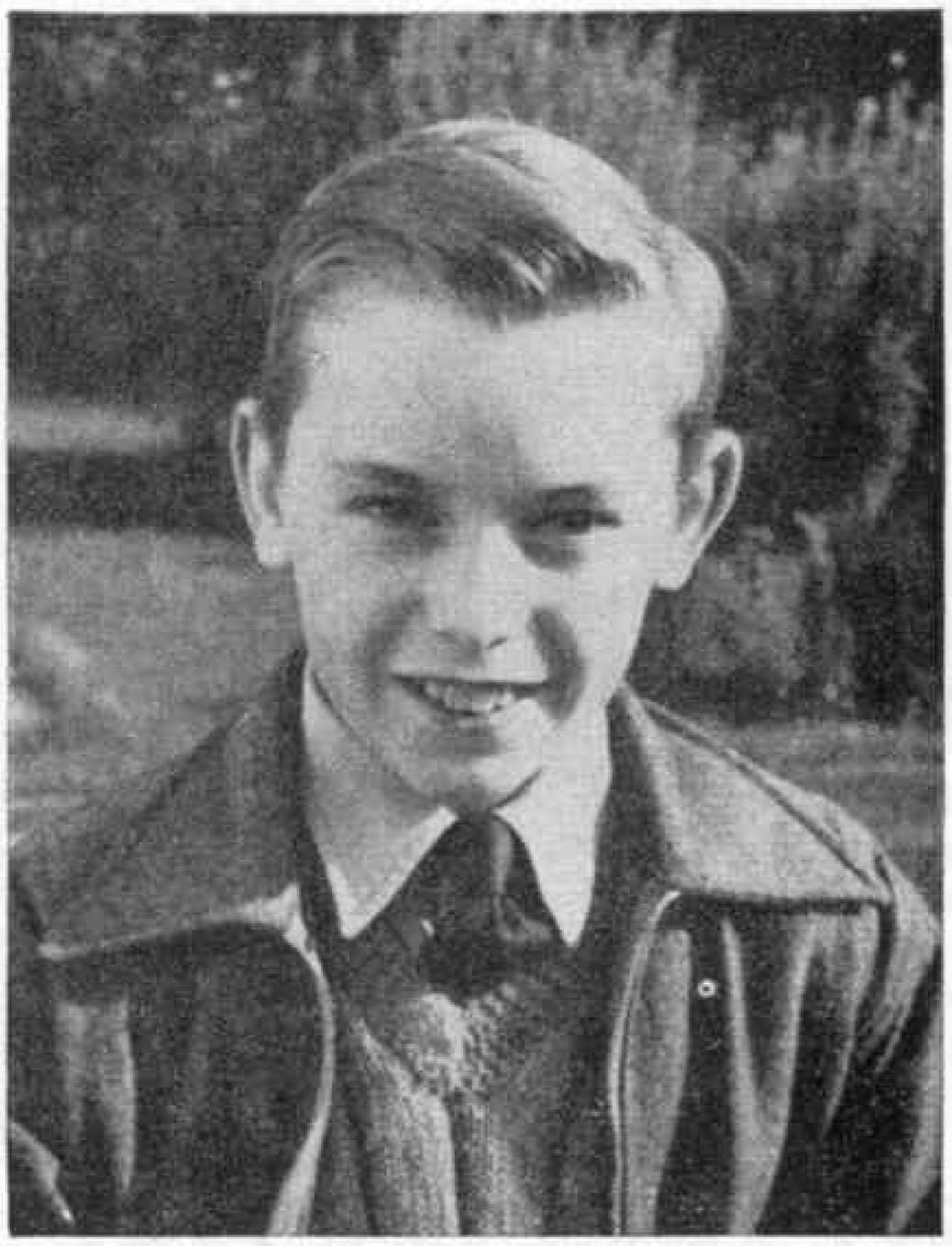
WITH THE SECRETARY

CHRISTMAS WISHES

The approach of the jolliest season of the year brings me the opportunity of wishing a Merry Christmas to every member of the Guild and H.R.C. and to all Clubs and Branches, and this I do with the greatest pleasure. Members everywhere will be looking forward to the festivities that mark the occasion and which in Clubs and Branches of the Home country generally take the form of a grand indoor Christmas party, with lots of good things to it—here the parents of members will gladly help to "stock the larder"—crackers to pull and hours of fun and games. In countries on the other side of the world, where it is now midsummer, the Christmas celebrations are naturally outdoor events, but the spirit of kindliness and goodwill will be just as evident there as here in the Home country.

Members of Clubs and Branches are always happier when they invite others to join in their fun, so parents and friends of members are usually invited to join in the Christmas jollifications.

A Social Evening does not require so much preparation as an Exhibition. The Club or Branch room should be brightened with some seasonal decorations, a programme of games drawn up and some form of entertainment arranged which members can enjoy. It adds to the fun if the entertainment is something provided by the members themselves—a song or two, a few recitations, perhaps a bit of amateur conjuring, and, say, finally a short talk by the Leader telling of some of the humorous happenings of Club or Branch life.



David Morgan, the industrious secretary of the recently-formed St. Thomas (Exeter) M.C. He is also giving excellent service as Honorary Graduate Secretary to the Juventus (Exeter) Football Club this season.

BRANCH EXHIBITION

The Droylsden County Secondary School H.R.C. Branch is holding an Exhibition in the main hall of the school on 9th December. Doors open at 7 p.m. Prices of admission: Adults, 6d.: Children, 3d.

CLUB NOTES

KENTISH TOWN M.C.—Members are busy on the construction of a model of a London Transport Underground train. It is being built entirely from balsa wood. New members will be welcome. Club roll: 14. *Secretary:* K. A. Hill, 20 Larchfield House, Highbury New Park, London N.5.

CONSETT AND DISTRICT Y.M.C.A. M.C.—The Session began with the Annual exhibition and show, at which the Club staged an excellent display of models built by the members. An outstanding feature was a model of a pit and its underground workings, including screens and a ventilating fan. Models to be built during the Session include one of a 20-ton lorry mounted crane. The Club layout is also progressing, and electrification of it is being considered. Club roll: 36. *Secretary:* B. Ward, 10 Cyril Street, Number One, Consett, Co. Durham.

ST. THOMAS (EXETER) M.C.—With Meccano model-building as the major activity members have been very busy, and models completed have included a rotating crane and various tools. Many drawings were completed by members. The Leader tells stories to the members during the last half hour of each meeting, and at present is relating, in serial form, his war-time experiences, which members find very interesting and thrilling. Club roll: 20. *Secretary:* D. Morgan, 33 Cowick Road, St. Thomas, Exeter.

HOLLAND

NIJMEGEN M.C.—A Meccano model-building competition is being planned, and the outstanding models will be displayed at next year's exhibition. Subjects chosen for model-building during the Winter include those featured in the new Meccano Special Model Leaflets. The construction of a model railway layout is in hand. Club roll: 20. *Secretary:* H. van Brienen, P/a Arksteestr 4, Nijmegen, Netherlands.

BRANCH NEWS

HALE END (LONDON)—The Branch room has been redecorated, and meetings are now held in very pleasant conditions. Additions to the layout are an engine shed, single line railway bridge to cross a double track, and several buildings. Work has begun on the construction of a station. *Secretary:* A. Coe, 463 Hale End Road, Highams Park, London E.4.

DROYLSDEN COUNTY SECONDARY SCHOOL—More members have been enrolled. The opening meeting of the Session was devoted to an exchange of train runs and spotting news. The layout will have to be dismantled, as soon the boys will be moving to a new school where, owing to less room being available, a modified layout will be designed and put down, as quickly as possible. Plans for a dumb-bell-shaped layout, based on a central through station, are shortly to be drawn up, however, and a start will be made on a baseboard for this layout as soon as funds permit. *Secretary:* Mr. J. Lawton, Droylsden County Secondary School, Manor Road, Droylsden, near Manchester.

NEWPORT (I.O.W.) CHURCH OF ENGLAND BOYS SCHOOL—Revision of the Branch layout so as to obtain more working space is under consideration. The Club membership has increased. *Secretary:* J. Richardson, Newport C.E. Boys School, Newport, Isle of Wight.

HORNBY RAILWAY COMPANY

From Plain Track to Railway

By the Secretary

THIS is the time of the year when many readers are looking forward to owning a Hornby-Dublo railway. If you are one of them, you have probably seen one or two display layouts, and possibly some of you may have watched Hornby-Dublo Trains running at a local Exhibition. It may seem to you a long way from the simple Train Set, with its oval layout, to the more or less extensive exhibition system, but there is no need to be discouraged. There is real fun in building up the layout by degrees, and this process of gradual development is the one that most Hornby-Dublo owners follow.

The layout need not suffer as the result of this method, because the addition of further track and the introduction of lineside buildings and equipment can go on side by side. Fresh layouts can be tried from time to time and this is one of the advantages of having a portable system. Sooner or later, however, you will reach the stage of having a favourite plan and by then probably the installation of it on a baseboard will be the aim. Sometimes of course a layout begins on a baseboard anyway. This certainly has advantages as long as the board is big enough to accommodate the system when it reaches the final stages of development.

You *could* run a railway without any lineside features at all. But these add so much to the realistic effect, and therefore to the proper enjoyment of train running, that you should have them if you can. But there is no need to worry if you can't, or don't, for some special reason. Even if the railway is confined to the track and the necessary railway equipment, it can still be very effective.

This is shown by the picture on this page, which shows part of the railway of the Sayers family, of New Zealand, that was referred to last August. The railway is on a board, but the view gives exactly the same effect as would be obtained if the line were simply laid down on the floor, as many have to be. The track itself stands out well and the arrangement of the station with its three platform faces is easily seen.

Even when a layout is mounted on a board it may still be regarded as portable, because the Stations themselves may not be fixed, only the track remaining in place, screwed to the board, when the latter has to be put away after use. I have spoken about the screwing down of track before, but so many intending Hornby-Dublo owners ask about it that I may as well say again that the correct screws to use for attaching Hornby-Dublo Rails to a board are No. 2 roundheads. Screws $\frac{3}{8}$ in. long are usually satisfactory, if a plywood base is used, but to obtain better "bite" in composition boards, of which there are many types nowadays, screws $\frac{1}{2}$ in. long are recommended. Never attempt to drive a screw into the board without first boring a pilot hole, and be very sure that the screw is driven straight. Any that are lying over

Just track, showing main lines, platform loops and sidings. This is part of the Hornby-Dublo layout of the Sayers family, New Zealand, that was referred to in the "M.M." last August.

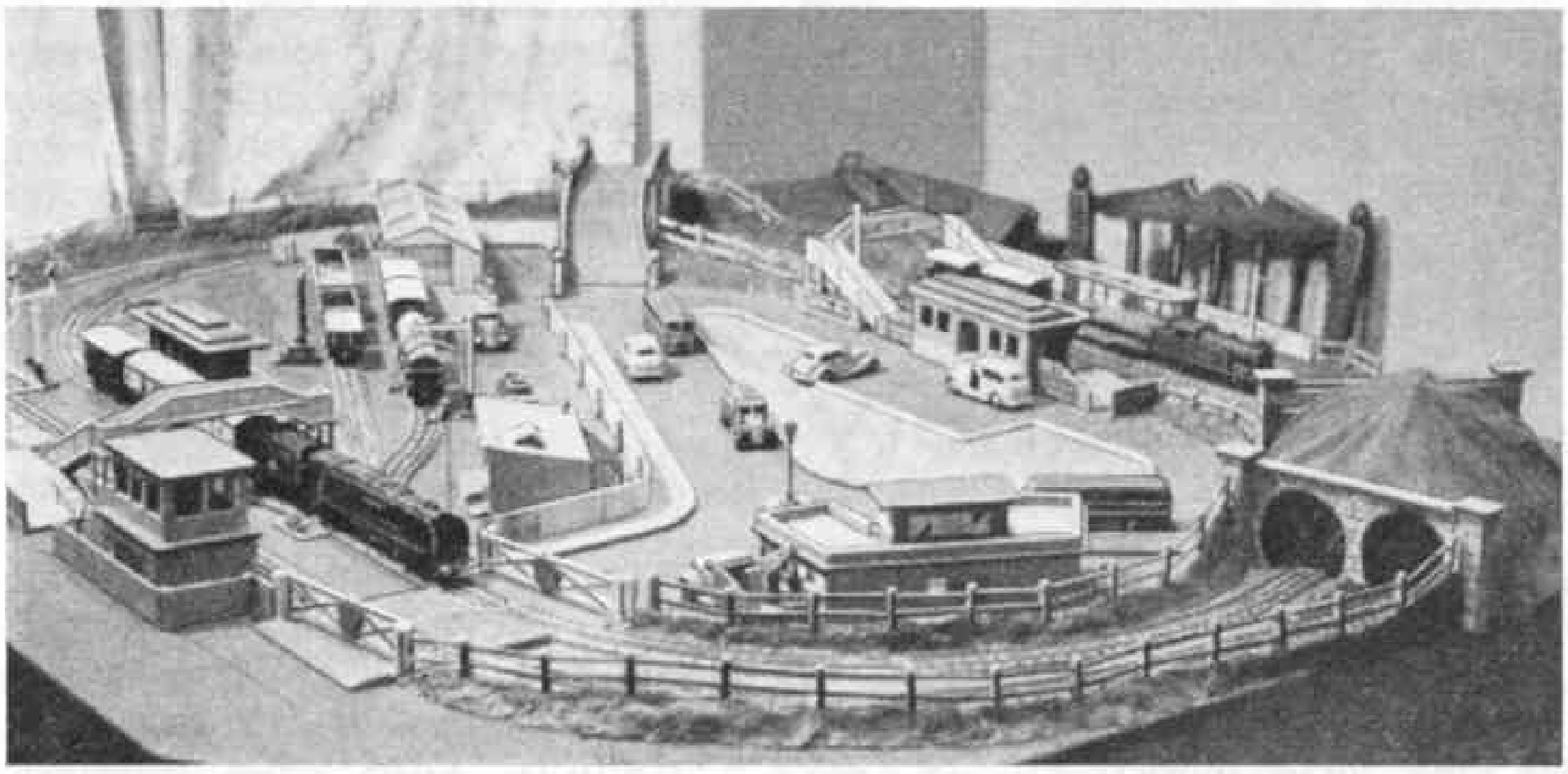
Martin Carman and Brian Mayes with their Hornby-Dublo layouts at a public exhibition. Photograph reproduced by courtesy of the "Wellingborough Evening Telegraph."

at an angle may well result in the track being out of line and the screw-heads may either touch the centre rail or be brushed momentarily by the engine collector shoes. In either case an elusive short circuit can be caused.

The upper picture on this page shows two layout boards arranged by their respective enthusiastic owners Martin Carman and Brian Mayes for Exhibition purposes. While the layouts themselves remain basically simple, as is always advisable for Exhibition work, the lineside has been developed in each case to include buildings of different kinds and some scenic effects. These additions do not prevent a good view being obtained of the trains. This is always an important point. It is possible in certain circumstances to overdo the scenic angle and the effectiveness of the trains when running is somewhat spoiled.

and the road overbridge on the opposite corner of the layout. Fencing, which can be simple home-made stuff of post and rail construction, correctly divides the railway from the property alongside it and the goods yard is separated from the pavement and roadway by a wall. There is a tunnel, too, as you can see, and although it is not a long one it is quite effective with its built-up entrances. Not all real tunnels are long, so there is plenty of excuse for the Hornby-Dublo engineer who is hampered by space and yet who wishes to include a tunnel on his line.

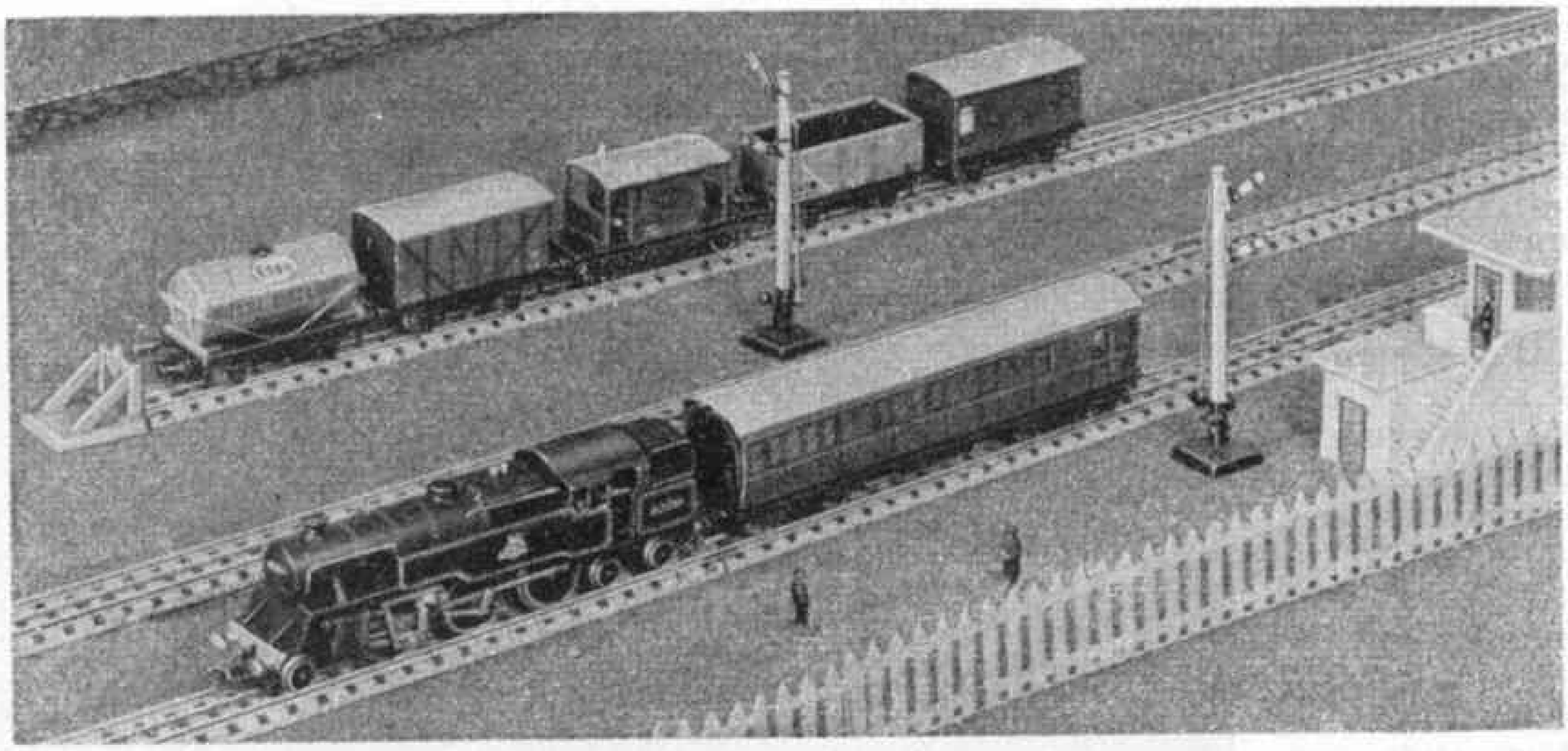
Miniature tunnels vary, but most have



A neat Hornby-Dublo layout in a restricted space, on which the owner has managed to include a tunnel, lineside fencing and a road system, in addition to the usual railway buildings. Will the owner of this layout please write to the Editor?

The final picture shows a layout in a domestic setting, all ready for the owner to come along and start the train running. This is not a big system, but it incorporates a fair amount of lineside detail. It includes a roadway that is necessary to justify the level crossing gates shown in the foreground

the common feature of some sort of frame-work between the tunnel faces to provide the required "hill" contours. This is covered with stout paper, well pasted, canvas or something similar, which can be improved with paint, glue and sand or earth, small stones, and so on.



Above is a one-coach special, a light load for the Hornby-Dublo 2-6-4 Tank Locomotive that is taking it along.

More Trains, More Variety

WE all agree that running a Hornby-Dublo Railway is good fun and most Hornby-Dublo owners spend a lot of their time running long-distance express trains, shorter-distance suburban services and of course the usual variety of goods trains. These all form part of the more or less regular running programme.

These trains are not necessarily worked in the same order every time the railway is used, however. Some Hornby-Dublo "Traffic Managers" work out different running schemes in order to provide some interesting variation. In doing this they are only following what happens in actual practice. Train services on Saturdays and Sundays, for instance, are invariably somewhat different from those on the other days of the week.

When in search of further variety, the Hornby-Dublo owner can provide various special services or perhaps give attention to some particular kind of traffic. Special workings are sometimes arranged in order to meet some particular emergency, such as the running of a special train to deal with passengers who may have missed a connection through no fault of their own. This, one imagines, is the situation in the illustration on this page, where a Hornby-Dublo 2-6-4 Tank is hustling along just a single 1013 Coach, a brake third of compartment type. No doubt the engine and the Coach were the only ones readily available to meet the operator's requirements and you can be sure that the "passengers" are duly grateful for the little special provided for them.

Imagination enters strongly into things in running a miniature railway, and most Hornby-Dublo owners will be able to think up some good reasons for the running of similar trains from time to time. These have to be fitted into the normal working programme and possibly they may use unusual routes. This is where the Hornby-Dublo owner can exercise a good deal of skill in working, particularly if his railway is already fairly well occupied with different trains.

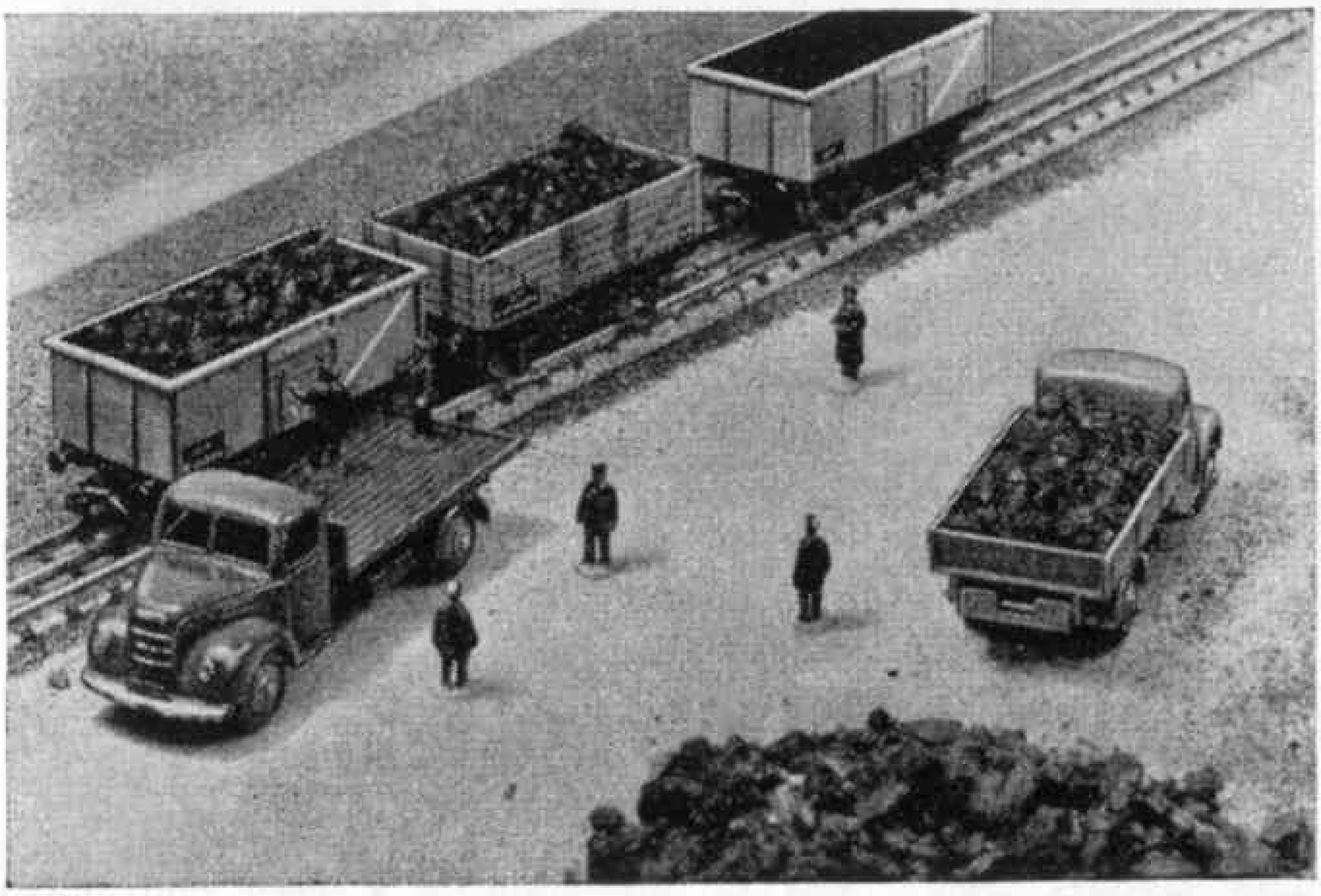
Such special workings need not be confined to passenger services but may include goods workings as well. Diversion of ships owing to weather or for other reasons may create the need for the running of various special goods trains, and the Hornby-Dublo owner can at least reproduce the railway part of such special working. Suitable rolling stock may have to be got together to begin with and the collection of, say, a train of Vans from different points on the layout can easily form a good exercise in operating.

The more ordinary operations of the railway are readily reproduced in Hornby-Dublo, as the upper photograph on the next page clearly indicates. Here is shown in miniature the familiar coal sidings in a

local yard, with merchants' lorries providing the road transport that forms the necessary part of coal delivery. For the railway part of the job the Hornby-Dublo Mineral Wagon and any of the other open wagons can be used, a certain amount of variation in the real types employed being quite usual.

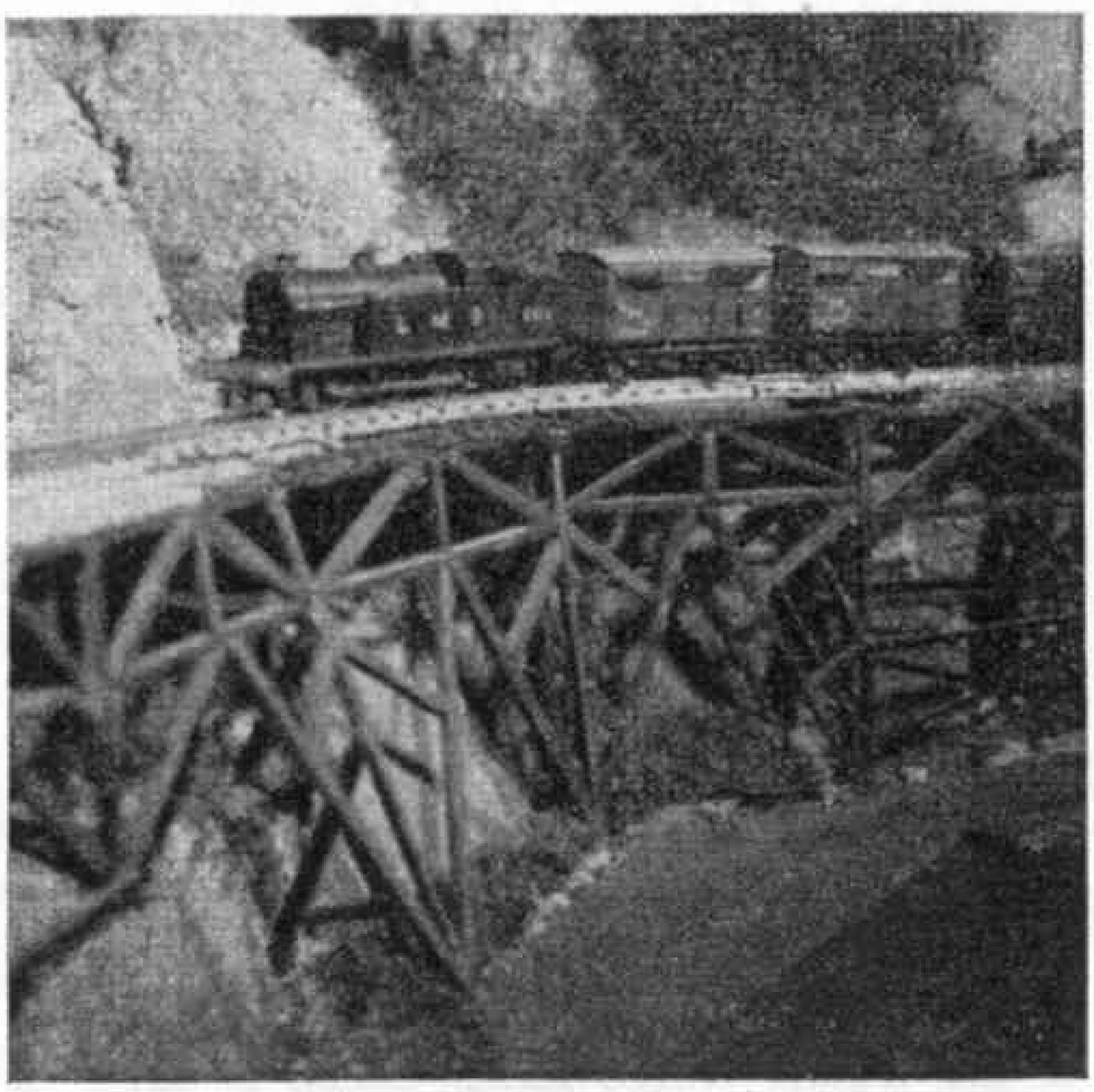
In providing the road vehicles, we all know that the Leyland Forward Control Lorry, Dinky Toys No. 420, is suitable for use with Hornby-Dublo Trains. But we can use certain other vehicles, if we regard them as being big examples of their particular type rather than as representatives of definite makes. In this way we can justify the use of the Fordson Thames Flat Truck, Dinky Toys No. 422, which is shown alongside the Mineral Wagon. Coal for it would have to be bagged, of course. The other vehicle is a Rear Tipping Wagon, Dinky Toys No. 414, which is taking away a full load. The tipping body will make it possible for this to be dumped complete at the delivery point.

Our third picture shows a cattle special on a layout in Canada. One might almost have guessed its location from the trestle structure, over which the railway is carried at the point shown in the photograph. The railway, which has been referred to before in these pages, belongs to *M.M.* reader Mr. H. A. Moir, of Nelson, B.C. As might be expected, the general style of the railway itself and its surroundings is distinctly Canadian, although the trains themselves are the standard Hornby-Dublo British-type products, as is obvious from the illustration.

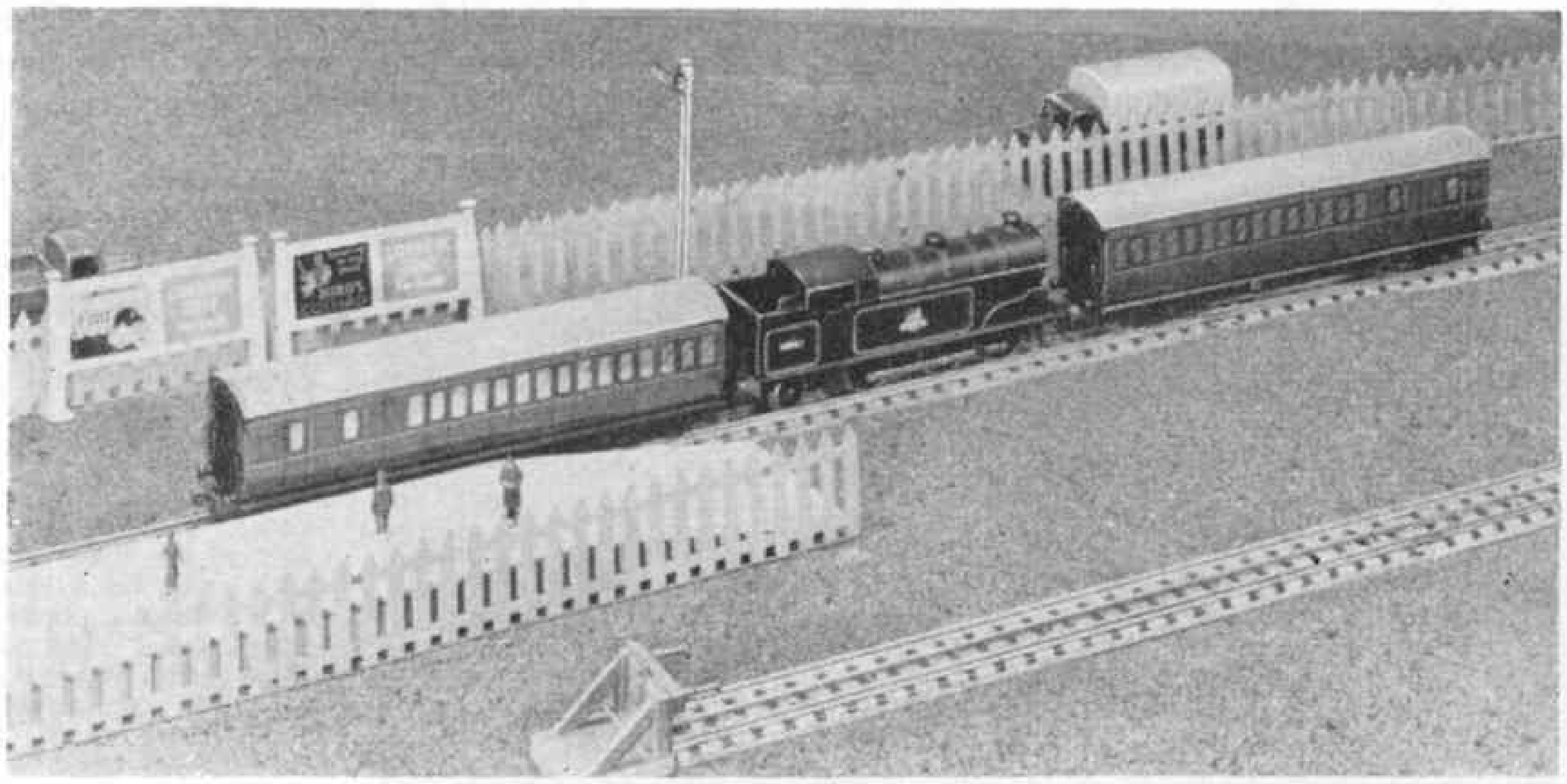


Coal! The siding and part of the yard used for this traffic on a Hornby-Dublo layout presents a busy scene. The Dinky Toys lorries represent the type of wagons usually employed for coal deliveries.

Special attention has been given to scenic effects so that the general aspect of the line is very striking. Buildings and equipment suggest Canadian railway practice, particularly a water tank and a coaling installation for the locomotives. On the traffic side, there is a passenger station very similar to the wayside depots found in Canada, while the trestle already mentioned is typical of the engineering features. There are other buildings, such as a cold storage plant and a stone-crushing installation.



An effective trestle structure on the Hornby-Dublo layout of Mr. H. A. Moir, Canada.



Rail and Train Formation

IT is not always the larger and more complex Hornby-Dublo layouts that provide the best running. It is nice to have a good big railway, of course, but one can have plenty of fun with just a small one, as long as it is properly laid out.

Plenty of running can be done even on the single line oval on which most Hornby-Dublo trains make their first journeys, and it is during this early stage that the Hornby-Dublo engine driver learns the elements of his job. As his railway develops it probably remains a single track affair for some time, although naturally sidings and possibly a loop line may be included as part of the general growth. Sometimes space restrictions play a part in this, but many Hornby-Dublo operators manage quite well with a single line system.

Continuous running round such a track is usually the rule and this cannot be varied unless one of the familiar S-shaped loops joining the opposite sides of the main oval is introduced. This provides the means for sending a train in the opposite direction, and for this reason the S-shaped or reversing loop is a popular feature.

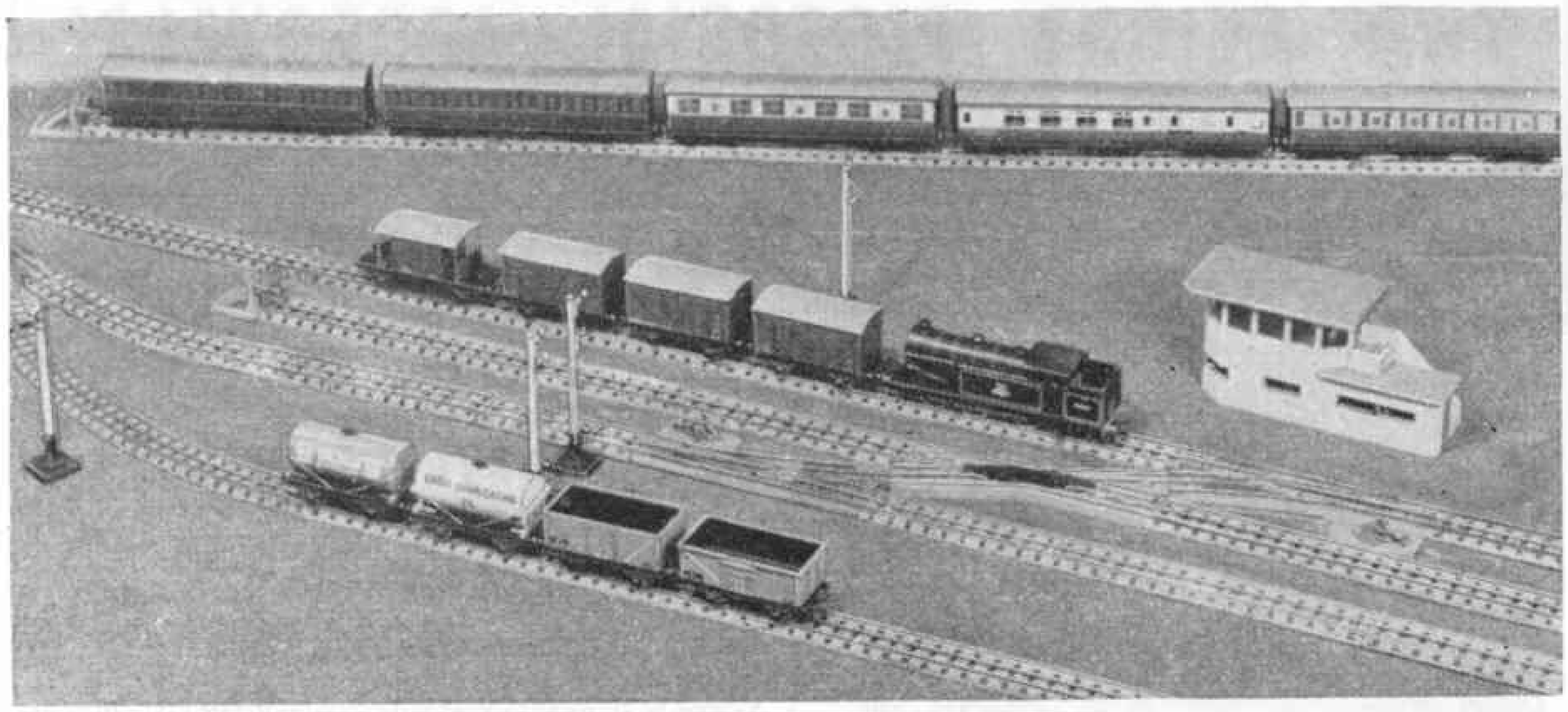
Running of this kind does not affect the formation of the train itself. But where running in either direction is to be carried out, the keen owner will endeavour to provide a brake third Coach at each end of the train. Where goods traffic is the rule the use of a Goods Brake Van at each end of the train is a very convenient arrangement.

A useful train working scheme for single line layouts of a simple type is that represented in the illustration on this page. Here we have a Hornby-Dublo 0–6–2 Tank Locomotive in between two Coaches, the whole arrangement forming a "push-pull" set. In such a unit in actual practice special arrangements are made so that the engine can be controlled from the special driving compartment at each end of the train. Vehicles specially fitted, and engines too, are needed for this in real practice, but fortunately the Hornby-Dublo owner does not have to worry about this. His Tank engine will work in either direction, pulling part of its train and pushing the other quite happily.

In the picture above a Hornby-Dublo 0-6-2 Tank is shown with two brake-third suburban Coaches forming a "push-pull" unit. No running round at terminals is required with this formation.

A special advantage of this "push-pull" arrangement is that running round operations are not necessary and therefore layout and platform arrangements at the journeys' end are simplified. The scheme is therefore specially useful for branch line working and some Hornby-Dublo owners make quite good use of it. One instance that occurs to mind is on the *Wye-Humble Railway*, a Hornby-Dublo system operated by G. A. Scott that was described in the *M.M.* last month.

Where space allows, the ordinary single line Hornby-Dublo layout can easily be

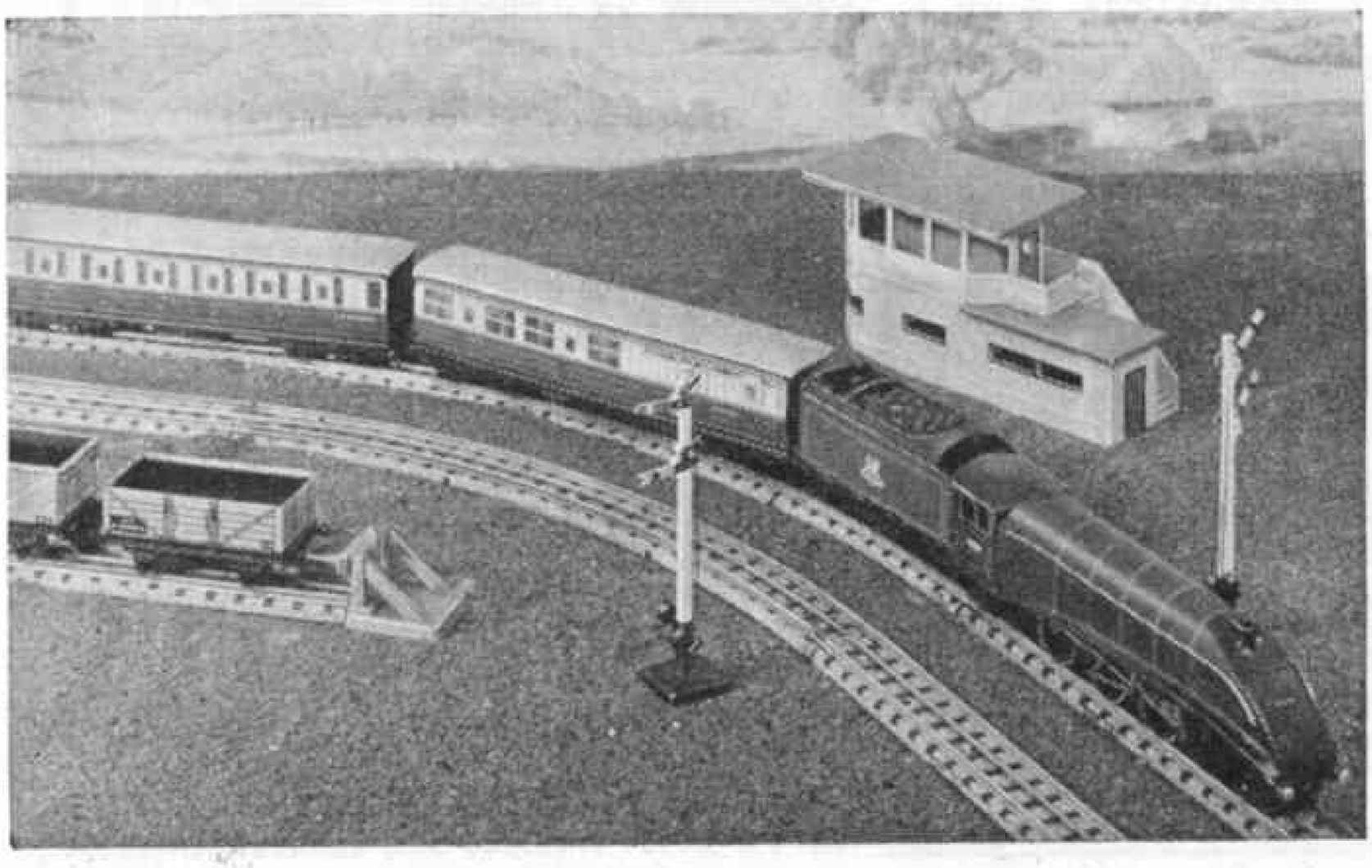


A train of Hornby-Dublo Vans is on its way to a marshalling yard in charge of the Hornby-Dublo 0-6-2 Tank.

developed into a double track system and most Hornby-Dublo owners will be familiar with the EDA2 Large Radius Curved Rails that make this possible. These are arranged to fit outside the standard curves already in place on a layout, the intervening straight sections being completed by means of ordinary Straight Rails, with any half or quarter lengths that may be necessary. When the EDA2 Curves are used, the up and down tracks are set apart the correct distance for Hornby-Dublo double track and where Points are needed to connect the two tracks they fit in without any trouble.

Of course a double track layout can still be continuous and most Hornby-Dublo layouts are so because of the opportunities that such systems provide for long through runs. Where a layout design does not include an actual dead-end or terminal station it is necessary to provide means for locomotives to run round or at all events to be released from arriving trains that have completed their journeys. This means that crossovers have to be installed to connect the up and down tracks, and in addition there must be an Uncoupling Rail conveniently sited, so that engines can readily be uncoupled from their trains.

The placing of these various track units in relation to one another should be given careful attention, and perhaps a little experimenting with trains of different lengths will be needed to perfect the arrangements. Time and trouble given to such developments before they are installed will be well repaid when train operations are in progress on the layout.



A Hornby-Dublo express on a double track system has a clear road past the Signal Cabin that is placed on the corner of the layout board.

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For other Stamp Advertisements see also pages 690 and xxii

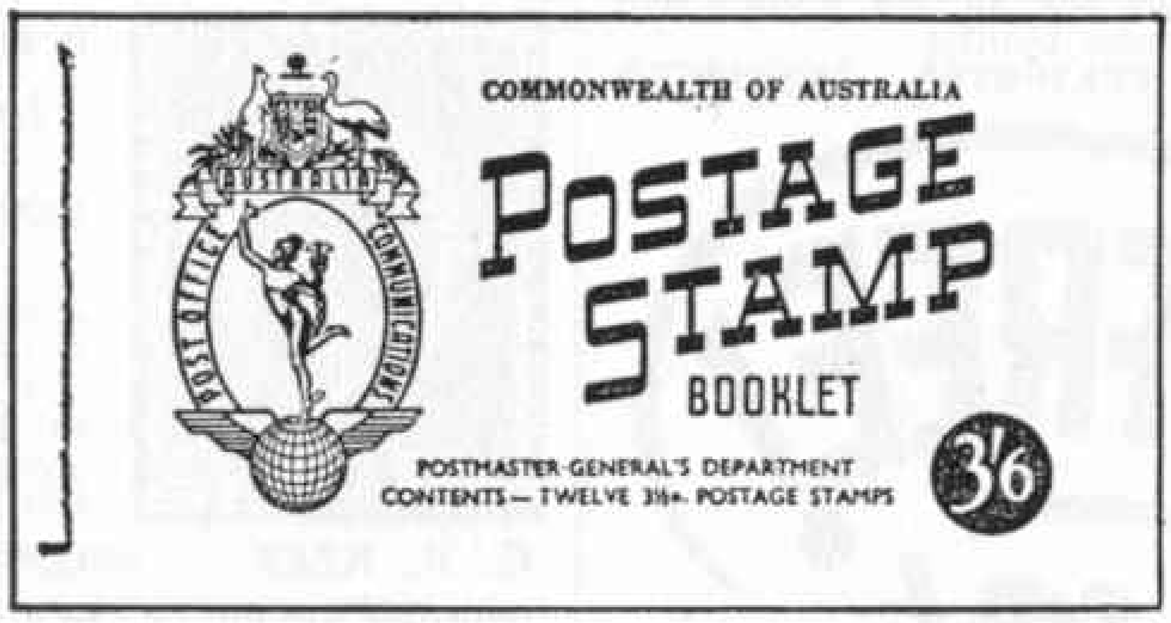
Stamp Collectors' Corner

By F. E. Metcalfe

MORE ABOUT STAMP BOOKLETS

I AM very glad I took up this subject, because I find now that I had under-rated the popularity of stamp booklet collecting. In my previous article I dealt in detail with our own British booklets, for these are the most numerous and by far the most interesting. Not only have the contents been changed, but the make-up also has been altered, and all these changes will be found detailed in the 1956 edition of the Commonwealth Catalogue of Queen Elizabeth stamps.

Before I get on to the booklets of the Commonwealth, I had better refer to what are known as the British Experimental type. That is how our own Post Office describes them. There are two kinds, and although both contain stamps to the face value of 1/–, they differ in every other respect. One contains six horizontal pairs of stamps, two each of ½d., 1d. and 1½d., and is of the shape of a razor blade; South Africa had 3d. and 6d. booklets of the same shape, and it was from these that the description "razor-blade type" sprung. The other 1/– booklet contains three blocks of four of the same denominations. There is another difference. The cover of the second type is printed, while that of the other is plain.



It is not too easy always to obtain these experimental booklets, for the machines are very disdainful regarding what kind of a shilling they will accept. Perhaps this is where the experiment comes in. In the G.P.O., London, there is a machine that is supposed to disgorge the razor-blade type, if you can find it in a disgorging mood. It is temperamental, as I have found, and that is the reason why these "bob lots" apparently are not always easy to come by.

Of Commonwealth countries, Australia, Canada, Ceylon, New Zealand, Southern Rhodesia, Nyasaland, South Africa, Rhodesia-Nyasaland and Mauritius have all issued booklets, and so has Ireland. All these still do, with the exception of Nyasaland and Southern Rhodesia. These countries have now merged and new booklets serve Nyasaland and both of the Rhodesias.

Here I would like to say a word about the now obsolete booklets of these African countries. They are rare. Less than four thousand of each were sold, and from these figures must be deducted the number which would be used. It wouldn't be very many perhaps, for it was collectors who mostly bought them. But even if all got into the hands of the latter, they would still be uncommon, and with increasing popularity I imagine that today's prices will soon go up sky high.

The booklets of Australia are very interesting, and indicate how hot some parts of the continent are. There is only one type of booklet, containing stamps of a face value of 3/6, but some of these are interleaved in a manner that the Australian Post Office describes as tropical interleaving. That is to say, between the panes of stamps there is an extra leaf of waxed paper to prevent the stamps sticking. The normally interleaved booklets do not have these extra waxed interleaves. This to my mind makes a very interesting variety.

Canada's booklets are very popular, and of various kinds, but while all contain stamps to the face value of 24c. actually they cost 25c. Canada does not allow advertisements, as does Great Britain, so users of the booklets have to pay for the make-up. Canada has booklets of panes of both five and six stamps, as well as strips of three, and it is from the latter that those stamps are obtained that sometimes confuse young collectors, who think they have obtained a rare imperf variety. These strips have quite wide margins, and are only perforated vertically, at each side of the middle stamp. It is thus very easy to take one of these outside stamps and trim the inside edge, and there you have a stamp with fine big margins!

It is not only young collectors who get caught in this way, for only recently I was shown one of these stamps by a man who was very proud of his "imperf," and could not understand why those behind-the-times catalogue editors had not listed treasures such as he possessed!

But if the imperfs are phony, the stamps themselves are of interest, differing as they do from the normal through being imperforate horizontally.

New Zealand has just announced that later on another batch of booklets will be issued there. These will differ from those on sale at present, inasmuch as they will contain also a page of airmail labels.

For scarcity the booklet from Mauritius must be the king-pin. It contains a pane of Coronation stamps, as well as panes of the normal issue. The number issued was only 1,600, and after deducting those which would be broken up, one can see there cannot be many left. But do not pay big prices for any booklet, unless it has been vetted by an expert, because fakes are about.

And now a word about how to keep booklets. You can of course store them in a box, in their original form, and this is the method I would recommend. But some collectors break them up, and mount the panes in an album as they would blocks of stamps. They look attractive enough that way, but keep them whole if there is any prospect of selling them later.

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Stamp Gossip

OUR OWN STAMPS

I SUPPOSE that the most important philatelic event for readers of *Meccano Magazine* who are collectors, was the release in September of the four high values for Great Britain, which in turn were overprinted for use in the Morocco Agencies and the Persian Gulf. The stamps are attractive to a certain point, but this country could certainly do a lot better. But the really absurd secrecy that surrounded the emission of these four quite ordinary stamps was the most notable feature of the whole business. There is no need to go into full details here, but readers can be assured that to have entered the innermost sanctum of Harwell would have been simple compared with getting a look at the stamps, the day before they were issued, at the reception which the Post Office held to show them to a section of the press unless of course you were especially invited.

ST. VINCENT

One of these days I must ask the Editor to allow me to write an article on this country, which is very popular with British and American collectors. In the meantime I cannot overlook the very delightful set issued in September.

This new set for St. Vincent, with designs based on those issued almost a century ago, are as delightful as almost any that will be issued during the present reign. There is nothing flashy about them, and how restful they are!

Another point—the printers show that whatever we may think about old designs, as far as the technical side of the release is concerned, old time printers could teach those of today precisely nothing. I would like to congratulate Waterlows on this St. Vincent set, which is certainly more than I would be willing to do about the deadly dull Great Britain release of the same month.

PERFORATION VARIETIES

I know that these articles are read as a recreation, and I do not like to write like a schoolmaster. But I do like to pop in bits of philately now and again, for you can get so much more fun out of the hobby if you know something of its technical side. So will those who know all about perforations please excuse my taking up a little space on them.

Readers who go in for either K.G. VI or Q.E. II stamps should be on the look out for new perforation varieties. One of these stamps appeared in August, in a new printing of four values of the existing set for Gilbert and Ellice Islands. It was the 3d. value. Instead of the perforation 13½ used since 1939, this has the new one 12 There was quite a rush to get copies,

for with the new set in preparation there was no likelihood of another printing of the old one, which might mean more of the stamp perforated 12.

These things often happen, and in fact some of the rarities of modern and old stamps are merely perforation varieties. Some of these stamps could not be bought for £20. Of course this latest Gilbert and Ellice stamp will never go higher than a few shillings at best, but that isn't a bad return for a stamp which was bought for 4d. So why not include perforation varieties in your K.G. VI or Q.E. II collection? It's worth it, believe me.

MORE VARIETIES

I recently received a letter from a New Zealand collector, who included two of the Postal Centenary 2d. stamps and drew my attention to the fact that, as he put it, "the ship which is normally some distance from the leg of the Maori, is in some cases quite near the leg, and what is the reason."

Well, the explanation is simple. The stamp is printed in two operations, and the figure of the man is impressed after the rest of the stamp has been printed. The second impression does not always fall on exactly the same portion of the stamp, and hence the varying position of the Maori.

These misplacements are sometimes so far out of position as to make the uninitiated think that they have dropped across an important variety. But I am afraid that generally such items are of very little importance.

PHEW!

Recently a collector sent me a stamp that he was sure *M.M.* readers would like to see, and I agree. It is one of a set of four issued by Turkey in March to commemorate the 40th anniversary of the naval attack on the Dardanelles on 12th March 1915.

The stamp illustrated shows a Turkish soldier actually manhandling a shell weighing 600 lb. His name was Seyid, and he did handle shells of that weight. The Turks are a tough race altogether, as I have seen for myself when in Turkey.

SVERIGE

There is only room for one more stamp this month, and I am picking one from the many I would like to illustrate, not because it is particularly attractive, but because it is puzzling a number of young collectors. They think that it is a mere label, and to be candid it rather looks like that. But actually it is one of a set of two issued by Sweden on 6th June—a great and notable day, my birthday—to commemorate National Flag Day. For those who keep reference collections of the various types of printing, these stamps were printed by the offset-lithograph process.

Was "Farnborough" Disappointing?—(*Cont. from p. 647*)

helicopters all made first appearances, some of them only a few weeks or even days after their first flight.

Whatever our own feelings about the Display, we can be certain that visitors from overseas were not disappointed. In the air and on the ground they were given the finest possible proof of the engineering skill, craftsmanship and achievement that make "Farnborough" not just the greatest of all flying displays but a super-market for the aviation world.

The Heart of the Engine—(*Continued from page 652*)

Needless to say, a gap can be created in it at the very beginning of the operation, so that the former can be placed in position, after which the ring is again closed. The end of the wire from the shuttle ring is threaded through a hole in the former, after which the ring is rotated rapidly, while of course the ceramic former itself turns more slowly. In this rotation the wire is carried up the outside of the former and down the inside as it is unwound from the ring, the result of course being the close and even winding seen in the illustration.

The machine is automatic. The length of wire wound on to the shuttle ring is determined by a special mechanism, and when the winding on the ceramic former is complete the machine stops automatically.

The shuttle ring can then be opened again and the completed winding removed. Nuts and screws are inserted in the two holes in the former, and the ends of the winding are looped under the heads of the screws before these are tightened. Then the resistance is ready, after testing and balancing the resistance into two electrical halves, for assembly into the controller for which it is intended.

Earlier on I pointed out that testing is of the greatest importance in the production of Hornby-Dublo locomotives, and this applies also to other electrical equipment of all kinds. A good example is illustrated in the lower picture on page 652. Here you will recognise the part under test as the Diamond Crossing, which for the purpose is fitted into a special rail layout.

There are two locomotives, each with a vehicle behind it, and these are run successively over the Crossing in both directions, journeys that they must complete smoothly and easily. A Diamond Crossing is regarded as suitable for Hornby-Dublo enthusiasts only when the operators are completely satisfied—and they are not only expert, from long practice, but also very critical of performance!

Unusual Jobs for Railway Engines—(*Cont. from p. 644*)

In Australia many obsolete locomotives were dumped into a hollow intact to help fill it up for goods yard extensions, but when scrap metal became scarce they were reclaimed piece by piece and wagoned to the steel furnaces. A further lot that had been dumped into a harbour were found to be too corroded even for this, but their remains were recovered as it was said that the presence of so much steel in the water affected ship's compasses.

Upon the occasion of Queen Victoria's Jubilee in 1887, the Great Western authorities were faced at Swindon with the problem of brewing tea for some 15,000 people celebrating the occasion with a great fete. Some old tenders were cleaned out—more or less—and three or four of them filled with clean water into which steam was blown from a goods engine. The boiling water was then extracted by carriers of tea urns from various special taps and the event was voted a great success. But it is also on record that the tea had a "tang"—and the men who had had to clean out the old tenders could not be induced to sample it!

Mention of old tenders reminds me that an ancient four-wheeled specimen is still to be seen trundling along the lines of the one-time Midland and Great Northern Joint system, working in local goods trains and conveying fresh water to signal-boxes and crossing keepers who have no suitable supply of their own. Beneath its rusty grey can still be found traces of the chocolate-coloured paint of the long defunct Eastern and Midlands Railway, and until recently the old vehicle bore the lettering *M. & G.N. Jt. Railway... Fresh Water Tank No. 13A*. So far it has not been honoured with any other inscription, much less a wheel-and-lion badge! It was originally one of a series of diminutive tenders supplied by a private firm for attachment to a number of small tank engines purchased from the Cornwall Minerals Railway about 80 years ago for service in East Anglia.

New Meccano Model—(*Continued from page 680*)

Flanged Wheels, over the ½" loose Pulley and fixed to the drum side.

When the machine is set in motion the threads will weave under and over each other and the plaited cord resulting will wind around the drum.

Any thickness of thread may be used, of course, but the ⅞" Bevel Gears should be replaced with ½" and 1½" Bevels when very thin thread is used.

Parts required to build the Meccano Plaiting Machine: 7 of No. 2; 2 of No. 2a; 8 of No. 3; 2 of No. 5; 11 of No. 6a; 8 of No. 8; 11 of No. 9; 2 of No. 10; 2 of No. 12; 6 of No. 12a; 4 of No. 12b; 1 of No. 13a; 4 of No. 14; 2 of No. 15; 4 of No. 15a; 3 of No. 16; 8 of No. 16a; 3 of No. 16b; 6 of No. 17; 2 of No. 19b; 2 of No. 20b; 2 of No. 21; 8 of No. 22; 1 of No. 23; 9 of No. 24; 1 of No. 24a; 3 of No. 25; 4 of No. 26; 3 of No. 27; 3 of No. 27a; 2 of No. 30; 2 of No. 31; 1 of No. 32; 2 of No. 35; 156 of No. 37a; 120 of No. 37b; 28 of No. 38; 1 of No. 48a; 1 of No. 52a; 30 of No. 59; 5 of No. 62b; 5 of No. 63; 34 of No. 69; 1 of No. 70; 2 of No. 72; 1 of No. 94; 1 of No. 95a; 2 of No. 96; 3 of No. 96a; 4 of No. 108; 2 of No. 109; 2 of No. 111a; 3 of No. 114; 7 of No. 115; 3 of No. 120b; 2 of No. 126a; 4 of No. 133; 2 of No. 133a; 1 of No. 154a; 1 of No. 163; 1 of No. 164; 1 of No. 171; 1 of No. 173a; 1 of No. 175; 3 of No. 186a; 2 of No. 186c; 3 of No. 69c; 2 of No. 188; 2 of No. 189; 1 of No. 211a; 1 of No. 211b; 2 of No. 215; 1 E20R Electric Motor.

SOLUTIONS TO CHRISTMAS BRAIN TEASERS

(*See page 695*)

Christmas Quiz—(1) Decorations; (2) Crackers; (3) Stocking; (4) Holly; (5) Nuts; (6) Christmas Tree Fairy; (7) Star of Bethlehem; (8) Turkey.

How many boys?—There were 17 boys and they each spent 4¼d.

Missing Letters—(1) Zebra; (2) Polka; (3) Reindeer; (4) Meccano; (5) Ghost Stories; (6) Santa Claus.

NOVEMBER EDITORIAL PHOTOGRAPH

The photograph reproduced on the editorial page of last month's *M.M.* was taken from a train crossing the Forth Bridge, and shows cars waiting to cross to North Queensferry by ferry boat.

A NEW GAMAGE BOOK

This 128-page publication, Gamages Book of Model Trains, Boats, Cars, etc., is best described as a handbook that will appeal specially to boys and not a few grown-ups. Miniature trains and equipment of various makes, including of course Hornby and Hornby-Dublo Trains, appear in the railway section, which occupies more than half the book.

Model aircraft complete and in kit form and the miniature engines and accessories necessary for them are dealt with, and there are, too, details of radio control apparatus both for aircraft and model ships. Miniature stationary steam engines, electric motors, workshop kits and modelling appliances are also listed.

Motor vehicles have a section to themselves and among the many models shown are Dinky Toys and kits and parts for the construction of vintage cars.

The book has a striking coloured cover and is fully illustrated. The price is 1/– from Gamages, Holborn, London E.C.1.

CORRECTION

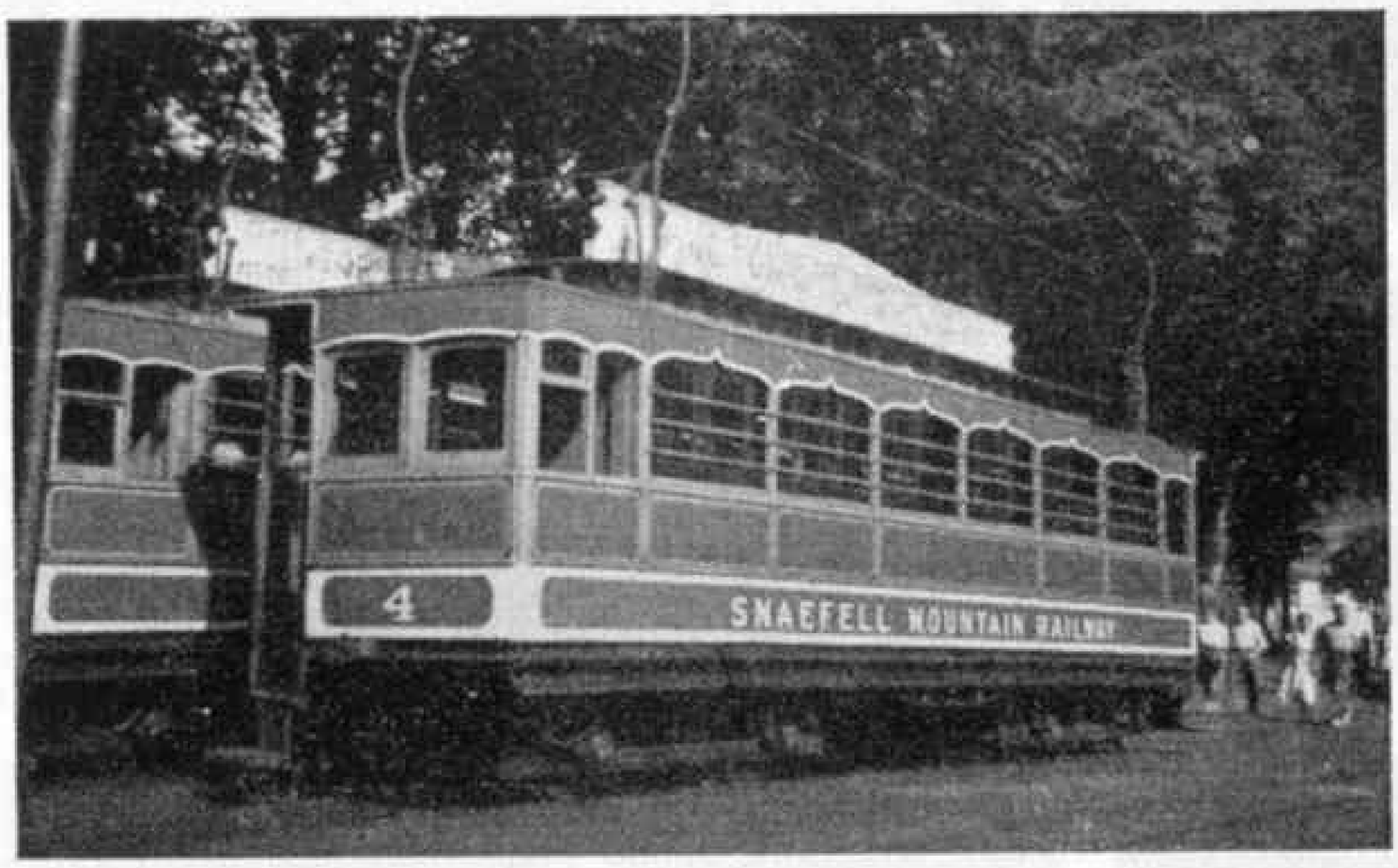
In our review last month of the latest edition of *The Commonwealth Catalogue of Queen Elizabeth Stamps* the price was given as 1/–; this should be 4/–.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

THE SNAEFELL MOUNTAIN RAILWAY

In his article about the Rimutaka Incline in the September *M.M.*, I saw that the author described it as the only example of the "Fell" centre-rail system in the world. On my visit to the Isle of Man during this year, I studied and photographed what was another example, the Snaefell Mountain Railway.



Two of the cars of the Snaefell Mountain Railway, Isle of Man, at the Laxey terminus. Photograph by P. E. Caunt, Moston.

This railway has six cars, all of the same design as No. 4 seen in the accompanying illustration. Each car has two electric motors, one at each end, which, when the line was opened on 21st August, 1895, drove flanged wheels that gripped a centre-rail. This rail was similar to the normal rail as used for railways, but it was fixed horizontally about six to eight inches above the sleepers. The outer rails were 3 ft. 6 in. apart.

The total length of the system is little less than five miles, and stretches between Laxey and Snaefell summit. The current is delivered to the motors via overhead wires and bow-collectors, one being fitted to each end of each car.

In the strict sense the Snaefell Mountain Railway is not now an example of the Fell system, for today the "Fell" rail is used to provide a brake for the cars on their descent, and also makes it impossible for the cars to leave the rails.

PETER E. CAUNT (Moston).

A LANCASHIRE LIGHT RAILWAY

What is perhaps the strangest passenger train in Britain runs daily, except on Sundays, on a 2½ mile single track railway situated near Preston. It consists of an old 0–4–2 tank engine that came from the late Southern Railway and before that had been owned by the London, Brighton and South Coast line. Behind the engine there are one to three "coaches" which are old London and North Western Railway Goods Brake vans of the type widely known as "Dungeons." These have been fitted with seats and have also had small windows cut out of the sides.

The railway runs between the village of Grimsargh, where it connects with the British Railways Preston-Longridge branch, and the large Mental Hospital at Whittingham, and is mainly used for bringing in supplies, particularly coal. The "passenger train" makes several trips daily for the conveyance of staff and visitors. It is well used, as there is no direct road access from the area served by the line.

Perhaps the most popular feature of this railway is the fact that no tickets have to be bought. Travel on it is free for those visiting the hospital.

J. W. GAHAN (Liverpool).

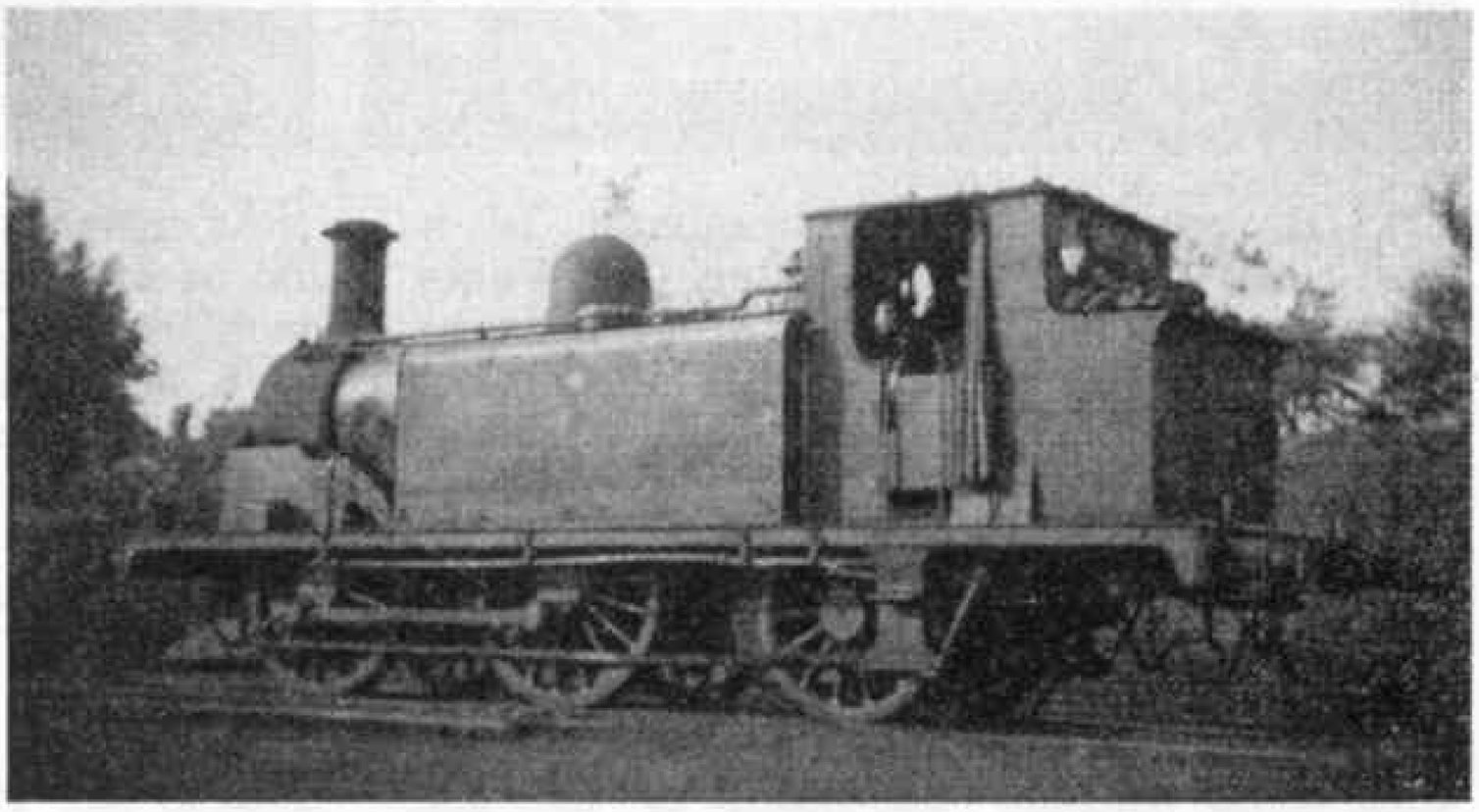
THE SMOKE TOWERS OF MOMBASA

While standing on the deck of a ship in Kilindini, the chief harbour of Mombasa Island, I saw, jutting up from the dark green vegetation, a cigar-shaped tower about 30 ft. high.

On going ashore, I found it to be a round, stone tower about 7 ft. across, with several vertical slits at intervals up to within a few feet of the top. At its base was a small doorway. It stood back a little from the roadway, on private land, as I found when two little boys asked me what I was doing in their garden!

The structure proved to be an old Arab smoke tower, used centuries ago to warn the natives of danger. Apparently they used to build a fire within, and the smoke rose through the slits into the air.

G. E. THOMAS (Pwllheli).



The old ex-L.B.S.C. 0-4-2 tank engine of the Grimsargh-Whittingham train. Photograph by J. W. Gahan, Liverpool.

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

What Cars are These?

OUR competition this month is a variation of the popular Car Faces contests that we have held from time to time, and is concerned with side instead of front views. The composite illustration shows the "profiles" of eight current types of British motor cars, and we invite readers to test their knowledge of these vehicles by identifying them, or as many of them as they can. Competitors should then make out a list of the cars, giving with each number the name of the car that it represents. Enough to identify the model completely is required.

As usual, there will be separate sections for Home and Overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded, with consolation prizes for other good efforts. In the event of a tie the judges will take originality of presentation into account. Do not forget to write your name, address and age on the back of your entry, and post it to *Car Profile Contest, Meccano Magazine, Binns Road, Liverpool 13.* The closing date in the Home Section is 31st January, 1956, and in the Overseas Section, 30th April, 1956.

Fireside Fun

The morning after Christmas, a harassed mother called to her husband while he was shaving. "Remember that unbreakable toy you gave Vicki yesterday?"

"I certainly do," he replied. "Don't tell me she's succeeded in breaking it already?"

"Not at all," said the mother grimly. "She's just broken all her other toys with it."

* * * *

"I thought I had suspended you two weeks for derailing a wagon on the siding!"

(Reproduced by courtesy of "Tracks," the Magazine of the Chesapeake and Ohio Railway, U.S.A.).

* * * *

Wife: "A tramp is at the back door and I'm going to give him one of my pies. I feel sorry for him."

Husband: "So do I."

* * * *

It was the Christmas Party in the barracks and Santa Claus was distributing his gifts. But one man remained unmoved. "You can have Santa Claus," he answered, when asked why he didn't join in the fun. "Twenty years ago I asked him for a soldier suit . . . . . and now I've got it!"

* * * *

Slim: "I once had a wonderful scheme for making money."

Fatty: "How much did you finally get?"

Slim: "Six years!"

* * * *

Artist: "I intend to make pictures that people in all walks of life will want to see."

Cynical Friend: "Ah, a pavement artist, I suppose?"

* * * *

A ship had stopped suddenly in a dense fog, and a passenger rushed to see the Captain and enquire why.

"Can't see the way ahead," said the Captain.

"But I can see the stars above us," argued the passenger.

"So can I," said the Captain, "but unless the boilers blow up we're not going that way."

BRAIN TEASERS

The answer to each of the following phrases refers to something closely associated with the Christmas season. Can you solve them?

1. Overhead or on the wall,
   Fix me well or I may fall.
2. At the party I always please,
   But not to eat and not with cheese.
3. On Christmas Eve I hang, forlorn,
   Yet I am full of cheer ere morn.
4. Partly red and partly green,
   I add colour to the scene.
5. I'm famous in a springtime song,
   But to Christmas parties I really belong.
6. Upon the topmost branch I stand,
   Symbolic of a mystic land.
7. No compass use to follow me.
   I mark a trail for all to see.
8. Despite my name I'm not from the East,
   But I expect you'll see me at the feast.

* * * *

A party of school boys visiting a circus during the Christmas holidays went to the snack bar in the interval. Each of the boys gave exactly the same order, and their total bill came to 6s. 0¼. How many boys were there?

* * * *

Can you insert the missing consonants in the following words, using the clues given as a guide?

– E – – A	An African animal
– O – – A	Old time dance
– E I – – E E –	A Christmas animal
– E – – A – O	Fine for presents
– – O – –, – – O – I E –	Often heard at Christmas parties (two words)
– A – – A, – – A U –	On Christmas Eve he reigns supreme (two words)

* * * *

Note: For solutions to these puzzles see page 692.

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

Charade

The word represented by the charade was CHOPIN.

* * * *

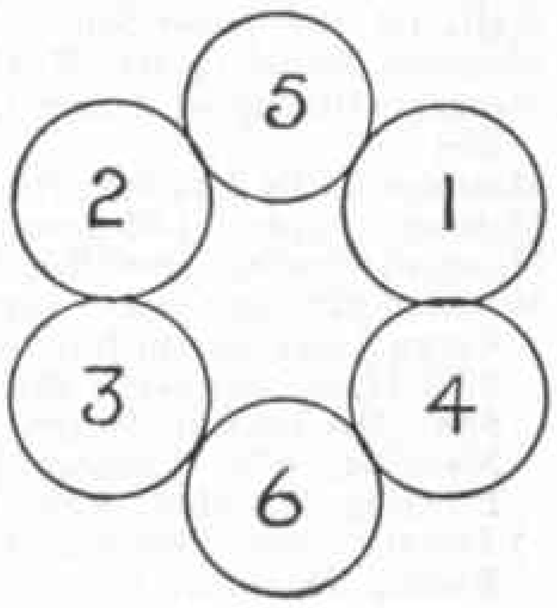
The Island Fire Puzzle

The shepherd started a fire himself across the centre of the island and as it was fanned southwards by the northerly wind he drove his sheep behind the blaze. When the original fire reached the centre of the island it died out as there was no vegetation ahead to feed the flames. The shepherd was then able to drive his flock back into the interior of the island.

* * * *

A Coin Puzzle

The solution to the coin puzzle is shown in the sketch alongside and the three moves are as follows: First, move coin 4 to touch coins 5 and 6. Second, move coin 5 to touch coins 1 and 2. Third, move coin 1 to touch coins 5 and 4.



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Make Leisure a Pleasure with Hobbies

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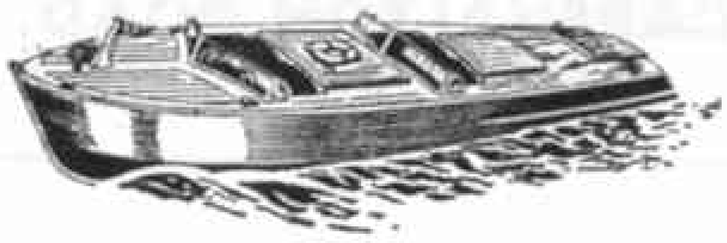

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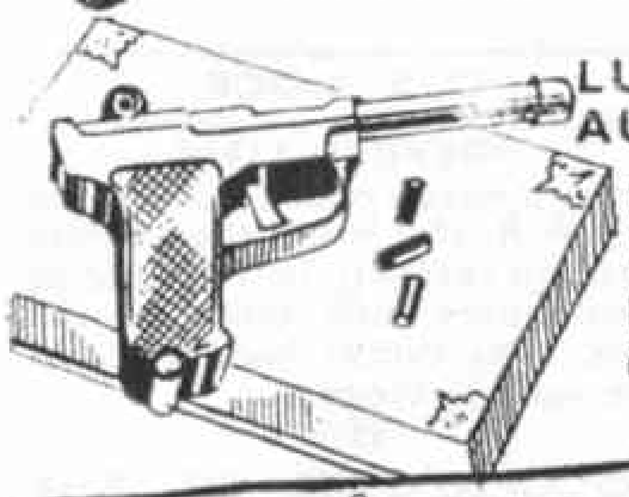

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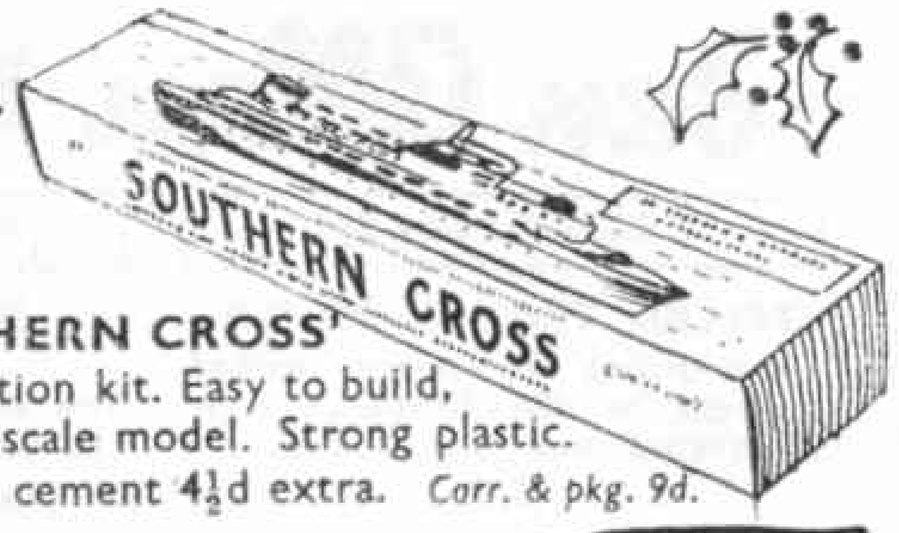

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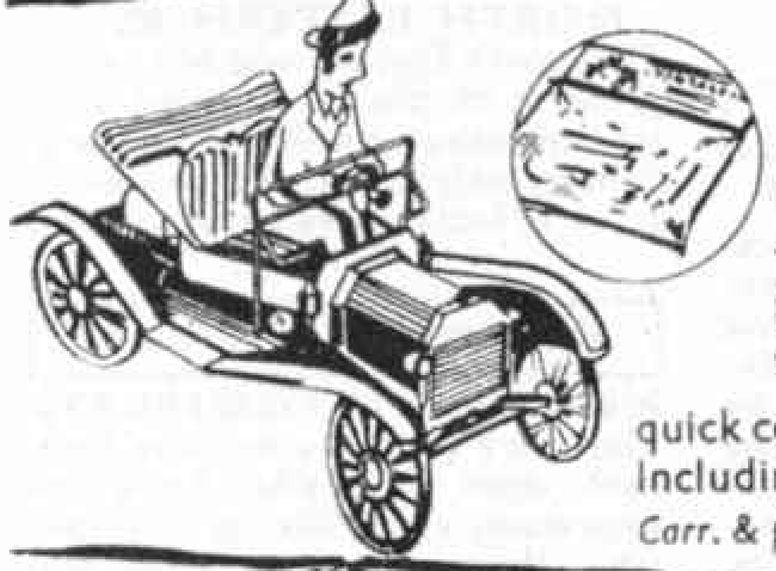

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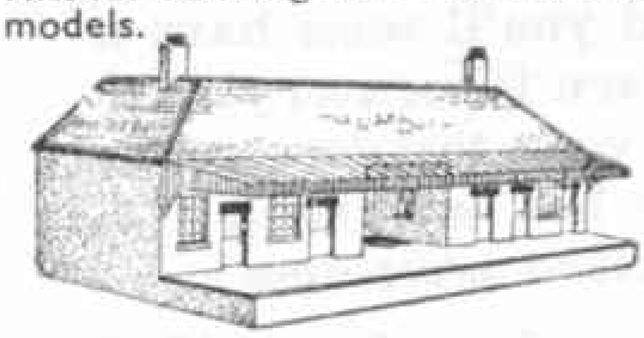

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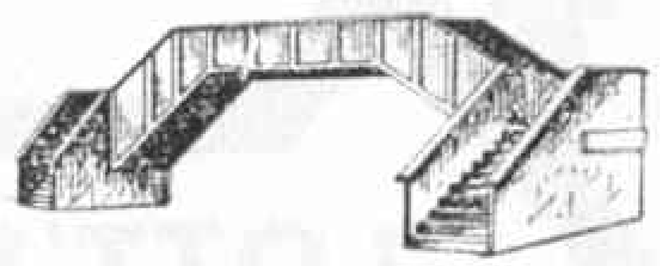

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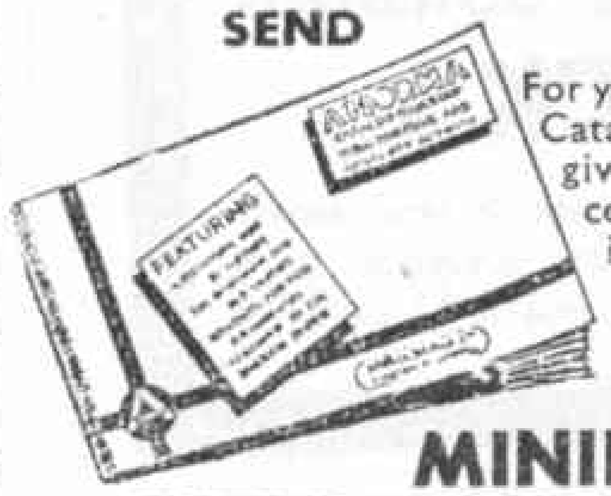

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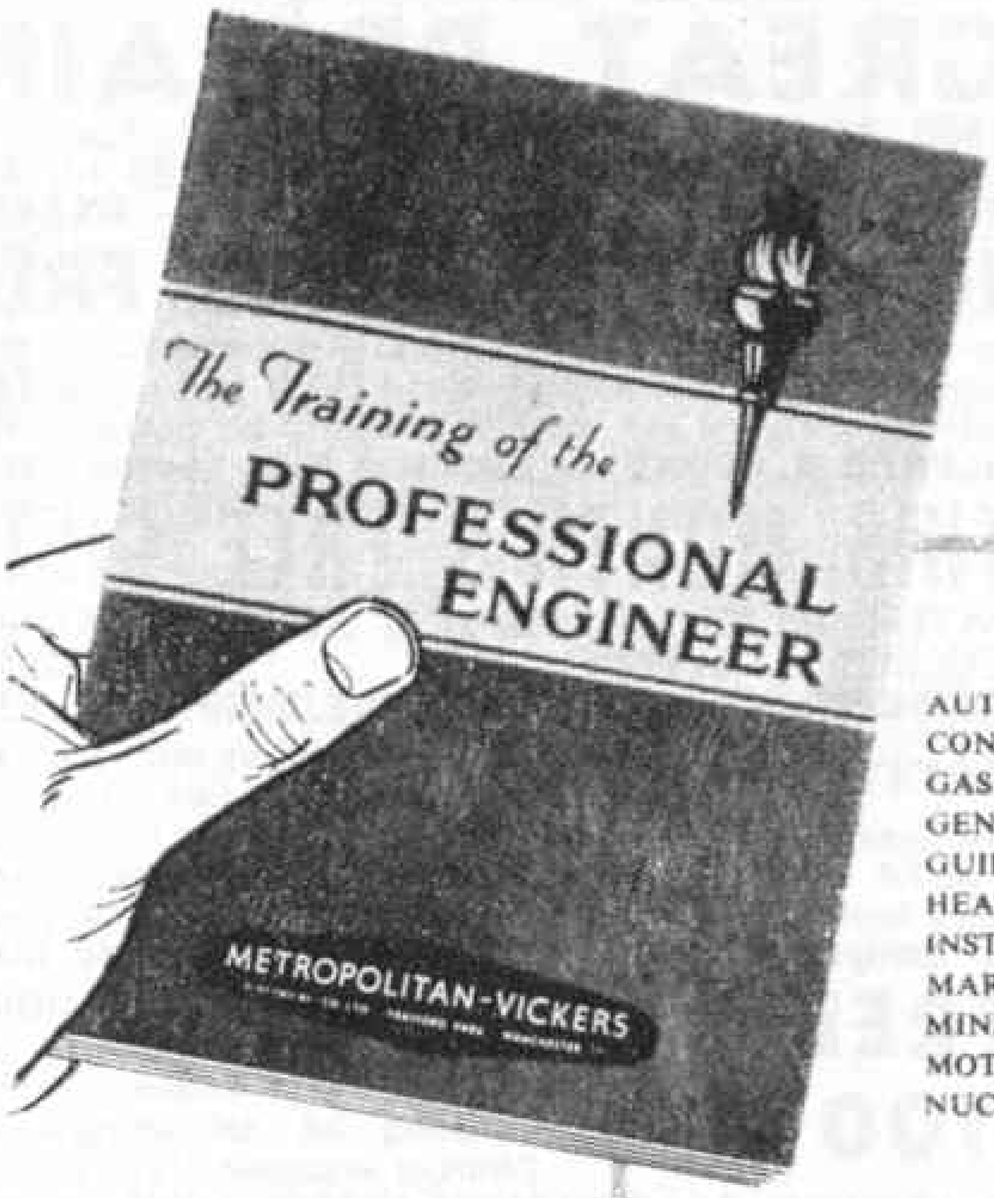

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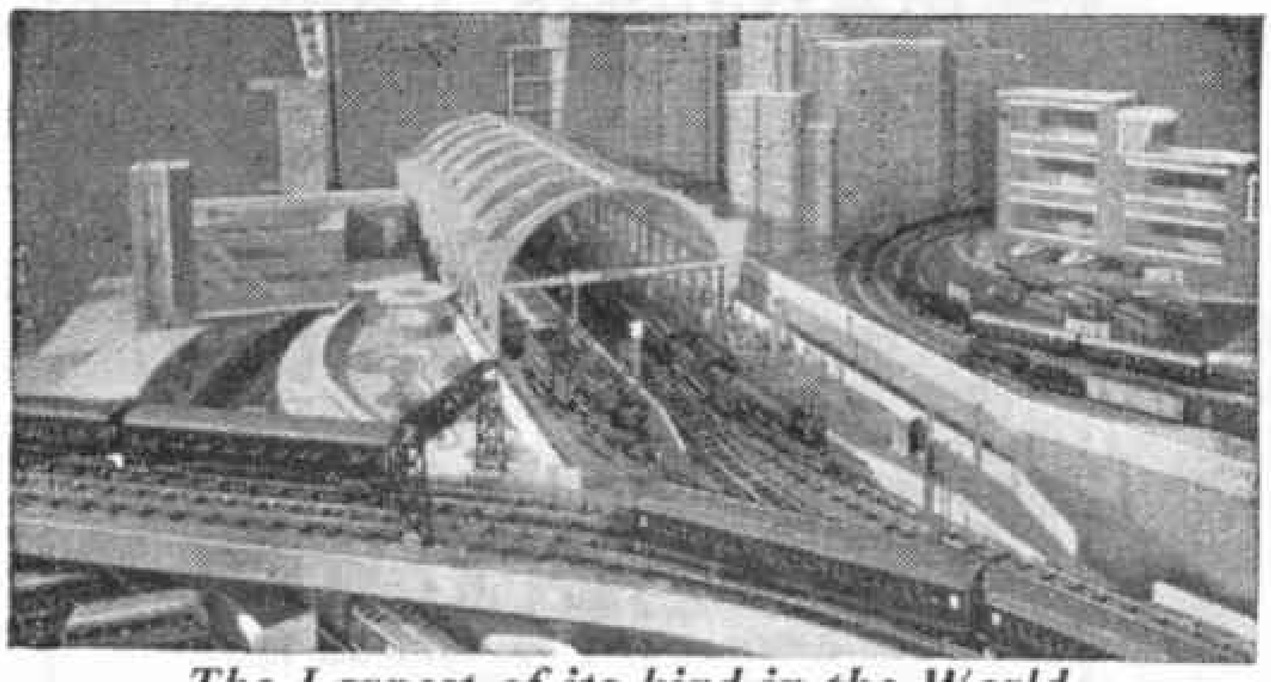

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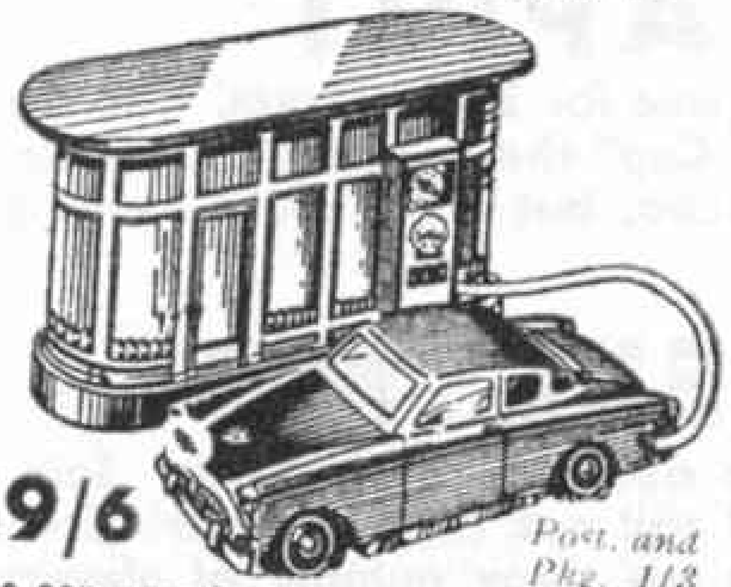

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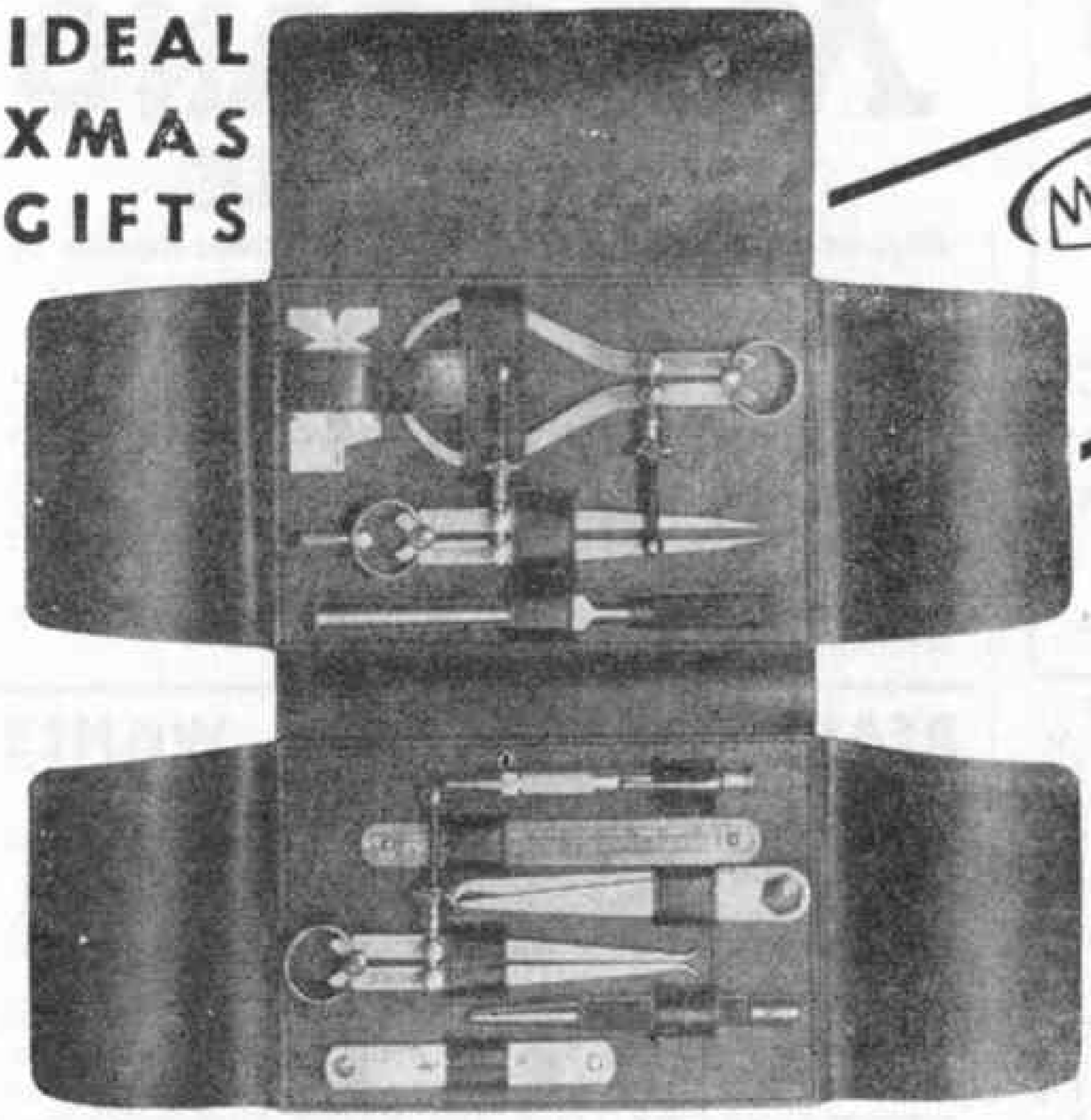

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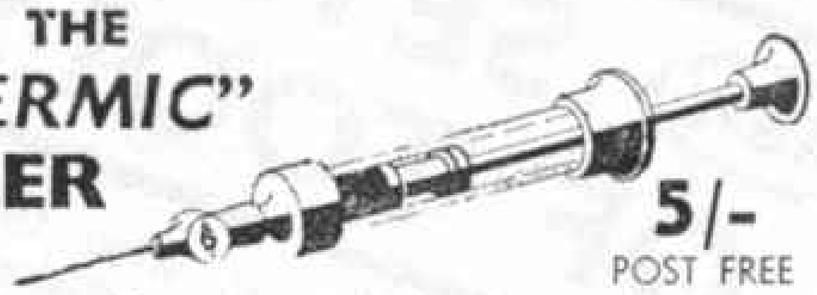

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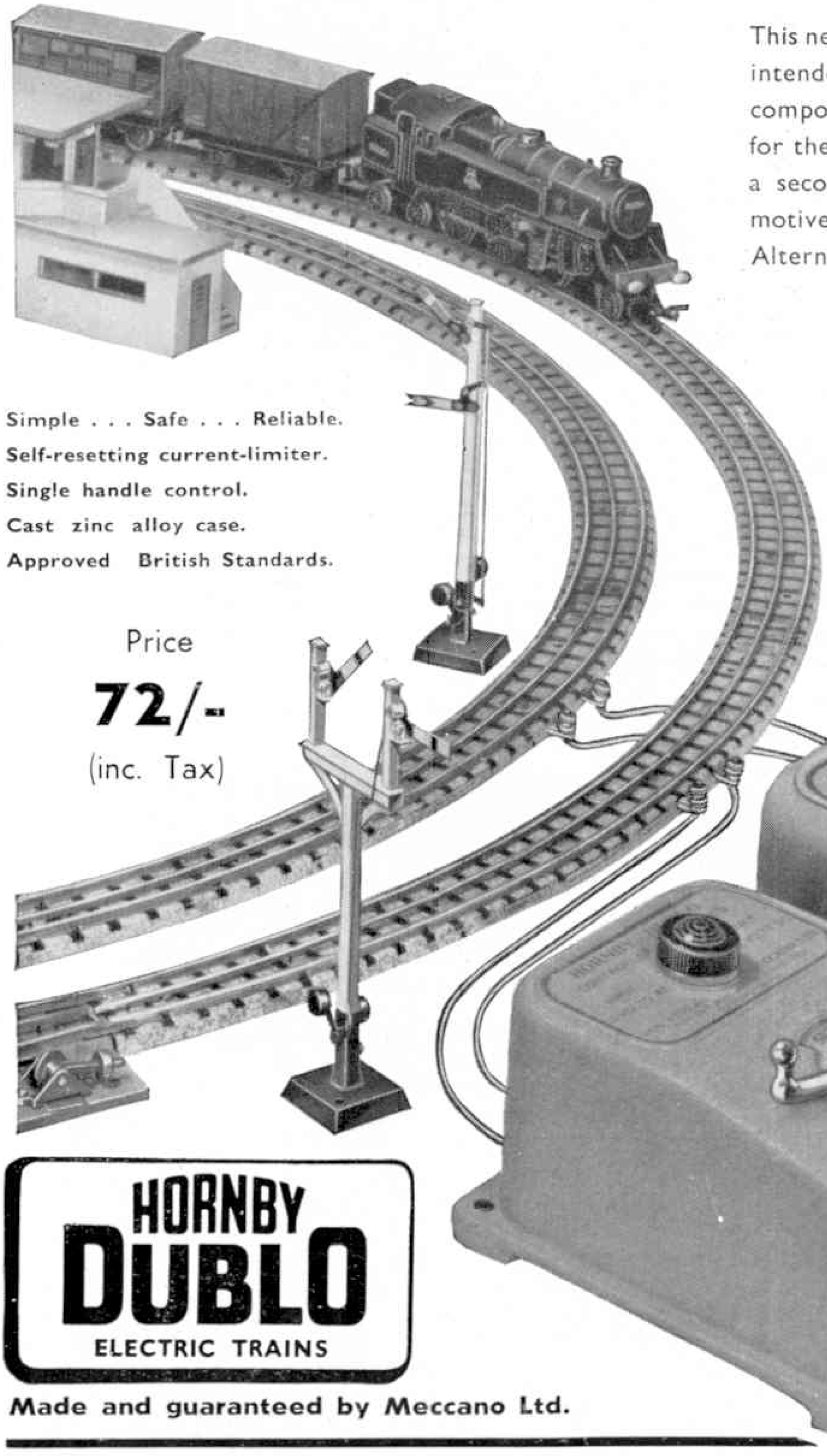

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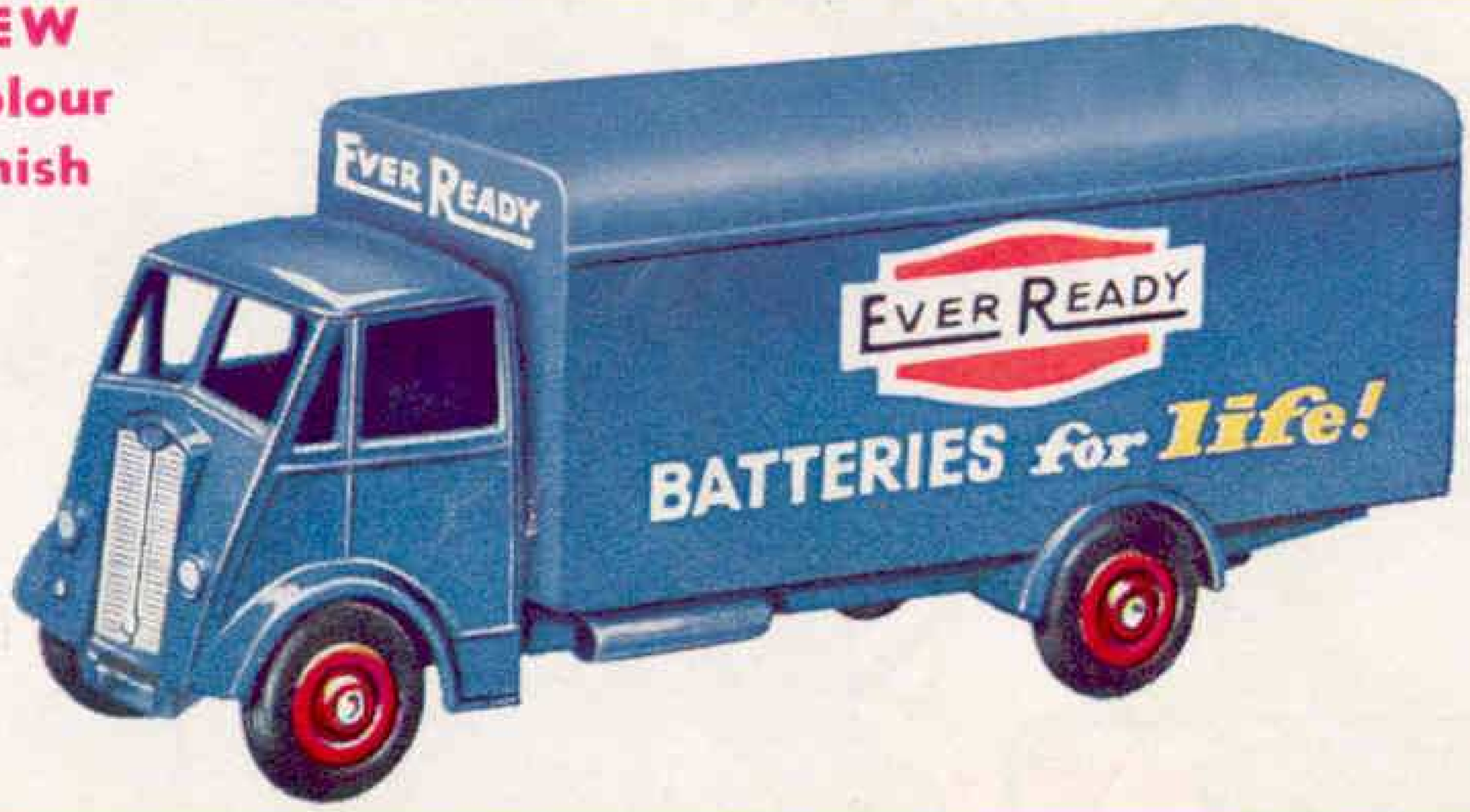

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